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Association of American Medical Colleges

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BULLETIN
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Volume 3 OCTOBER, 1928 Number 4

Teaching of Psychology in the Medical Course*

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The teaching of psychology in the medical course has been a subject of debate, almost of controversy, for at least two decades, and the matter is still far from settled. In one sense, this question represents simply another chapter in the long story of the evolution, or, perhaps, one should say the emancipation, of our ideas with regard to matters of mental health—a story that dates back to the very beginnings of medicine. In another sense, however, it is safe to say that whenever uncertainty persists with regard to the pedagogy and place of a subject in an organized system of training, it is partly because the subject has failed to make itself entirely clear as to its place and its methods. Psychology is not without responsibility for the present state of uncertainty that continues about it in medical circles.

There are several ways in which the question before us might be approached, and careful consideration of it has not been lacking in the past. It may be recalled that in 1911 an important symposium[1] was held on psychology and medical education with contributions by Franz, Meyer, Southard, Prince and Watson. These authorities were fully agreed in urging very definitely that something should be done but were without much unanimity as to what or how. The following year the American Psychological Association appointed a committee consisting of Franz, Southard and Watson, to investigate the situation more thoroughly. A careful survey of the status of psychology in medical schools on this continent was conducted by this Committee through questionnaires. Of the 116 schools consulted replies were received from 71, including 24 class A plus institutions and 31 class A. No replies were received from Canadian schools, which no doubt accurately indicated the small interest taken by Canadian universities in the matter at that time.

*Presented at the Thirty-eighth Annual Meeting, held at Montreal, Oct. 24-26, 1927.
1. Reported in J. A. M. A., 1912, Vol. 58, 909-921.

Psychology in Medical Curriculum

The result of this 1912 survey[2] revealed a very wide diversity both in the place given to psychology in the medical curriculum and in the opinions held by administrative officers and clinical teachers as to the worth of the subject from their standpoint. These opinions varied from enthusiastic endorsation to equally enthusiastic rejection. The impression one gets from reading this compilation of testimony is that, for the most part, personal attitude rather than any serious spirit of investigation dominated the situation.

The conclusions arrived at by the investigating committee of 1912 may bear recalling. In substance they were:

1. That some instruction in psychology is essential in order that students may understand the mental life of their patients.

2. That a suitable introductory course in psychology might very well be *required,* in the same way that elementary chemistry, physics and biology are required.

3. That there should be a second course in psychology, succeeding the introductory one but preceding the course in clinical psychology and neurology. That this course be of a practical nature is emphasized; it should incline towards psychopathology but not degenerate into a course in psychiatry.

4. The Committee would prefer that this course be given by a competent medical man but they comment on the difficulty of finding men qualified. (The fact that such men are still nearly as scarce in 1927 as they were in 1912 would seem to indicate a weakness at that point in medical education.)

5. That the content of psychology courses should be made the object of careful consideration by the staff both of psychology and of subjects most closely allied to psychology (biology and neurology); that the elementary course should not be framed exclusively to serve the practical needs of application, since that may too easily be overdone with failure on the part of students to grasp general principles; that the instruction should be of a laboratory nature as far as possible; that psychologists should cooperate more closely with physicians.

I have not endeavored to compile statistics for 1927 comparable with those gathered for the above report. While figures on the present status would not be without value, my impression from personal contact with centers where this question is being carefully considered, is that a statistical survey (particularly by questionnaire) would be inadequate. Mere emphasis on the amount of time devoted to a subject gives little insight as to what the teaching amounts to. The objective in the teaching, the content, the pedagogical methods, as well as the personality of instructors,—their industry, patience or sense of humor,—may be more significant than the number of hours, although the time allotted to a

2. Reported in Science, Vol. 38, Oct. 17, 1913, pp. 555-566.

subject does, of course, indicate something concerning the degree of local interest in it.

Psychology a Socialized Discipline

In the decade and a half since this A.P.A. report nearly every year has brought to light one or more articles on the teaching of psychology and allied subjects in the medical curriculum, which have consistently urged the need of psychology and of some revision in psychiatry to make it more of a socialized discipline and less of an institutionalized psychiatry. Three main impressions are left with me from recently reading these articles in their order of appearance:

First, there seems to be a wide and growing acceptance of the view that psychological factors have an important place in the life adjustments of persons (and patients) in general, and that our conception of health must be broadened to take these mental factors fully into account. Some orientation of students towards an understanding and appreciation of these factors should therefore be attempted through formal instruction. The question for us is, How to do this?

Second, there is a constant appeal that for mental health (as for physical health) we should aim not merely at remedial measures but also and primarily at preventive measures. Here we are directed toward the point of view of hygiene and in particular toward the early years of childhood whence the basic mental habits take their rise. This seems reasonable, but in terms of our problem of pedagogy, the question it at once raises is, How much systematic knowledge have we about the mental hygiene of childhood, and how are its first principles to be established in order that they may be effectively taught?

Third, there appears to be agreement that what we require in medicine in order to do justice to the mental factors that appear in patients or that may tend to undermine health, is not a few mental specialists but rather more adequately trained general practitioners able to recognize and deal scientifically with these situations as they occur in the general run of patients young or old. This means that the teaching problem which here concerns us is one of general medical education on the undergraduate rather than the graduate level.

Pedagogical Experimentation in Psychology

Accepting these constructive, forward-looking suggestions from the discussion of recent years, one senses also certain omissions. Thus, in the first place, practically no stress whatever is placed on the need of experiment and of an experimental attitude towards the pedagogy of our subject in order to accomplish the ends recommended. I know that this is in the minds of some of our best teachers of psychology but it rarely finds expression in the literature. Deficiency in pedagogical experimentation is not peculiar to psychology, although it may be peculiarly needed in our subject. There seems today to be too little reflec-

tion, discussion and exploration on methods of teaching in most university subjects—in fact, less attention than is paid at the kindergarten and primary levels. In higher education we have departmentalized the subjects without ensuring integration of the instruction. Whether this freedom in instruction really works in the best interests of students, i.e., whether they will get a desired "point of view" simply by "taking" various courses (or subjects) in almost any order, is a point worth looking into. The answer cannot be dogmatically assumed; it must be inductively ascertained. For psychology, at any rate, I feel that an experimental attitude in our teaching is required in order to know whether the means attain the end. Reference will be made below to some of our experiences in attempting to co-ordinate the teaching in our own department.

Second, in the literature referred to I fail to find any significant advance on one of the above recommendations of the A.P.A. Committee, namely, how to relate psychological instruction closely with that of other scientific branches on the medical curriculum—with the basic sciences of physiology, neurology and pathology on the one hand, and with the applied disciplines of psychopathology and psychiatry on the other. At first glance it might appear that this was merely a broader (interdepartmental) setting of the problem just mentioned, i.e., how best to coordinate the subject matter that is taught. For psychological medicine, however, this issue means much more. It is necessary to have the student think not in terms of special organs or organ systems but of the whole living organism as a person, reacting physically and mentally to a changing environment primarily social in character. The departmentalizing tendency in the somatic sciences dissects this conception so completely as to kill it for the student as dead as a cadaver. Moreover it is never resusitated by fitting together the factual data of physiology, neurology, etc. The conception of a living personality has to be given to students and kept alive in their minds at the same time as they are studying the physical structure and processes of the human body.

Interdepartmental Cooperation

From the psychological angle, therefore, the main pedagogical purpose in interdepartmental cooperation will be for instructors to find and mutually emphasize as many points of reinforcement as possible and to smooth out as many seeming oppositions as possible between these major conceptions. Otherwise the student is left on his own resources to unify as best he may the diverse views he hears from different quarters, and if he reflects at all he is lucky to escape bewilderment. Obviously departmental cooperation on ideas requires time and necessitates going into the details of subject matter, but from our experience the benefit of this both to instructors and students well repays the effort. It is mainly to the younger members of the staff that we must look for prog-

ress in this direction, but senior members should, at least, see that opportunity for such contact is facilitated. The pressure of teaching schedules in medicine is one difficulty that stands in the way of more fruitful contacts between teaching staffs. How often are our meetings of staff devoted to matters of time-table and the mechanics of organization, and how rarely to the exchange of ideas and the general improvement of our teaching as a whole.

Research on Child Nature

Third, although the literature emphasizes the preventive point of view and the importance of the period of childhood, practically nothing is heard about the necessity of research on child nature. All who teach psychology from the genetic standpoint realize how essential is research in this field in order better to understand the development of fundamental habits during infancy and the pre-school years (sleeping, eating, elimination, play, etc.) and the adjustments that enter at more complex levels of thinking and action. Norms of child behavior must be known before the deviations can be interpreted clinically, and only through child research with proper facilities can this be done. There are theories in plenty, for example, concerning the significance of infantile sexuality, etc., but these doctrines are mainly deduced from the examination of selected adult patients and not from the study of children as we find them in ordinary life. This is not the occasion to enlarge on the methods and findings of child study but I can personally testify that research in this field is already modifying and improving the psychology that will be helpful to medical students particularly in regard to the foundations of mental health.

Place of Psychology in Medical Curriculum

In spite of these omissions the past decade leaves us no reason for discouragement, rather the contrary. When we consider that within our own time the teaching of psychology in medicine, at least in the larger schools, has grown from almost nothing to very respectable proportions there is no ground for complaint but rather a challenge to take stock of our stewardship. If changes in the kind or amount of psychology are desired for the coming decade, what vision lies behind the proposals? In short what interests govern our attempts at curriculum construction?

The war, of course, was responsible in part for the present impetus to deal more intelligently with mental conditions, and psychology has profited through the demands then forced upon it. But prior to the war and contemporary with the newer interests in public health there had grown a real, if somewhat vague, appreciation of the importance of mental health problems. Clear understanding of these problems and

of how best to handle them will take years to accomplish, as was the case with public health now firmly established. No one is foolish enough to think that at present he can fully envisage the form in which the problems of mental health and their solution will evolve during the next fifteen years. Nevertheless the movement is afoot, the demand exists, and it is our business in medical education to look forward and build our curriculum today to meet the felt needs of tomorrow. In this our outlook will largely determine our teaching. If, for example, we teach psychology simply as a subject, our success will likely be limited to the fact that we have added another subject to a curriculum already overloaded. Instead, let us first consider carefully what we wish our future practitioners to be able to do which they otherwise would not, then select and teach the essential principles that will meet this need. In this broad sense application is the acid test for determining the content to teach; but this criterion, in turn, presumes that systematic principles of practice in mental medicine are being evolved which may guide our teaching. The pedagogical process is thus a circular or reciprocal one, contributing to practice and being guided by it.

Advance in Mental Science

The sum of this is that advance in mental science depends on more than formal teaching. It involves simultaneous advance: First, in research, to clarify the problems, formulate general principles and devise techniques; second, in teaching, to produce a larger and better crop of skilled workers; third, in application, to achieve the best possible service through the general practitioner or other avenues. I seriously question whether any one of these issues can safely be divorced from the others without danger of losing the perspective toward which our Universities should contribute. Instruction in medicine is not primarily an end in itself but a means of applying organized knowledge to certain human needs through the medium of a trained personnel. A program of instruction in psychology must ultimately be weighed in this balance: Is it advancing knowledge through research? Can it contribute in preparing doctors for the realities of practice? Can it broaden their sphere of usefulness to the public? With due modesty I believe that the correct answers to these questions are in the affirmative.

Teaching Psychology at Toronto

Leaving these general considerations may I take the liberty of referring to the plan of instruction we are attempting to work out at the University of Toronto? It will serve to illustrate certain points, but must not be regarded as a model or as a completed project—its many shortcomings will be sufficiently obvious. The present plan originated and took shape under the guidance of the late Dr. C. K. Clarke, pro-

fessor of psychiatry and dean of our Medical Faculty, and came into effect with the establishment of our six-year course in medicine eight years ago.

Psychology and Psychiatry

Perhaps the principal feature of general interest is the close co-ordination of psychology as a department in Arts with psychiatry as a clinical department, in the attempt to formulate a combined body of instruction distributed over several years of the medical course. I do not need to dwell on the fact that a conception and arrangement of this sort is rare. It was a firm conviction with Dr. Clarke that normal psychology, properly taught, should be the foundation for psychiatry, as physiology is for pathology or anatomy for surgery. No stronger incentive or better opportunity for a staff in academic psychology could be imagined. This intimate relationship favored by Dr. Clarke has proved entirely practicable and for several years nearly half of our undergraduate teaching has been for the Faculty of Medicine. Although the departments of psychology and psychiatry are not as yet immediately juxtaposed on the campus, distance has not been a difficulty, and most of the preliminary medical instruction is advantageously given in our own laboratory. For the remainder, our staff hold their classes or clinics in the Psychopathic Hospital which was opened on the campus in November, 1925, under Professor C. B. Farrar.

From the outset the project has been conducted in an experimental spirit, both on points of major organization and of pedagogical details. Its evolution is still in process and after eight years we are just beginning to feel confident on the soundness of some aspects and to realize the modification needed in others. Since it is my purpose to refer only to undergraduate teaching, the matter of postgraduate training for medical purposes and the relationship between the elementary and advanced work must here be taken for granted. A further point which we regard as indispensable to our local teaching, though distinct from it, is the program of mental hygiene research which is conducted mainly by our senior teaching staff.[3] This work has been carried on for three years and is projected over a longer period and wider range. To date the research has been concentrated on problems of childhood, studied through contact from the University side with a public school population, with the Toronto Juvenile Court and Department of Health, with a pre-school child laboratory on the campus, and with other agencies, clinics and services in the community. Without the advantages of some such background of investigation we should feel less confident about the possibility of having worth-while instruction to offer.

3. The Canadian National Committee for Mental Hygiene in 1924 established research divisions at the University of Toronto and McGill University. The research staffs are University personnel and at Toronto the work so far has been mainly of a psychological character.

Courses of Instruction

In its present stage the combination of psychological and psychiatric teaching falls into three fairly distinct parts:

I. A series of short obligatory courses for medical students from the third to the sixth year inclusive.

II. The "Psychiatric Option," a series of full semester courses, optional from the second to the fifth year of medicine, and additional to the work in I.

III. Instruction covering one to two years for the "Supplementary Services" of medicine, i.e., public health nurses, probation nurses, social service workers, occupational therapists.

Certain details of these series will be referred to below with a chart. In general, the aim is to have the entire program of instruction in this field planned and given by a united staff thereby to insure a common understanding and objective in the minds of all staff and students concerned.

"Supplementary Services"

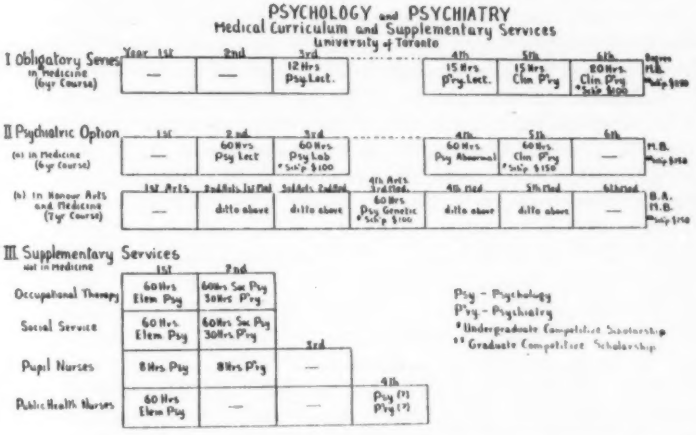
It will be noted that the instruction reaches beyond medical students as such to include the workers designated above under the heading of Supplementary Services. The latter have an extremely important place in modern psychological medicine. For the most part the contribution of these lay workers is beyond the horizon of the physician confined to private practice, but under community organization these services are becoming more and more indispensable to preventive psychiatric work. In their respective capacities many of these workers must operate in part at least under the direction of a physician with psychiatric interests, but their special training has not always had sufficient in common with his to promote a mutual understanding and appreciation of the methods and responsibilities of each. The physician as a clinician may know little about the technical side of social work although he is expected to prescribe the follow-up program for a case of social maladjustment. Obviously, we have here a practical division of labor and of knowledge which must integrate perfectly if the best interests of the patient are to be served. From the standpoint of mental health in cases of social adjustment this is too vital a point to be left for chance to solve; the clinical and the social outlook must function as one. Perhaps the best means of ensuring this teamwork is to make it axiomatic in the instruction we provide for all parties, and hence the ultimate responsibility rests in the University, i.e. with those of us who teach. In short, a program of psychological and psychiatric instruction must be conceived sufficiently broadly to meet the needs not merely of physicians but of the physician and his non-medical assistants.

Our present arrangement of courses may be seen from the attached chart where the prescription in each series, obligatory, optional and sup-

plementary, is set out in hours for the various years. The three groupings may be briefly commented on in turn.

Obligatory Series

This series is a continuation of the program that had existed prior to 1919 under the five year medical course. Practically every large medical school has some plan of instruction comparable with this. The twelve hours of introductory psychology in the latter part of the third year are arranged with us on the time allotted for physiology; they are given by a member of our staff who has his degree in medicine as well as



in psychology. The subsequent psychiatry, didactic and clinical, is distributed in courses of from 15 to 20 hours over the three final clinical years. This is a modification of our previous arrangement which had a single course in clinical psychiatry in one of the senior years. With the facilities afforded by the new Psychopathic Hospital the subdivision of this instruction has certain pedagogical advantages.

The plan of teaching most effective for the entire body of medical students in a short series of this sort is a persistent problem that faces every medical school. We do not profess to have solved it. The crucial points unquestionably are how to begin and how to end it, i.e., how to introduce the major psychological conceptions and how to arrive finally with the proper emphasis on prevention in terms of mental hygiene principles. The major psychoses will have been passed in review but the end stages of mental deterioration or disease can never be the point of major interest for the general practitioner. He may, it is true, occasionally have to certify a patient, but every day he will meet many

in whom the mental factor is a significant component of the health picture.

Psychiatric Option in Medicine

This series is more or less unique of the Toronto situation. It belongs as one feature in a system of options introduced with the six year course in 1919. Under this arrangement every student in medicine is required to take one scientific and one cultural option course of 60 hours in both his second and third year, and students who are then sufficiently proficient in their basic subjects are permitted to continue one option in advanced work during their fourth and fifth years in medicine.

Within this system the departments of psychology and psychiatry have planned the "psychiatric option." It comprises four semester courses of 60 hours each extending from the second to the fifth year. These must be taken in sequence if the student wishes (or is permitted) to continue in this series. The psychiatric option is open to all students in the Medical Faculty and also to those who are taking the combined course in Arts and Medicine. The latter receive their B. A. after four years, having then the equivalent of three years in medicine, and they graduate with the B. A. and M. B. degree after three further years (i.e. a seven year course). These students are enabled to take an additional course on child psychology in their final year of Arts beyond what is offered for medical students.

The system of options as a whole, representing several scientific branches, has proved a marked success. The psychiatric series began eight years ago with an enrolment in the opening sophomore class of ten students; this psychology class now regularly has from half to two-thirds of the entire year. The practical course following has to be restricted in enrolment (approximately fifty-four) to suit our laboratory accommodation; the upper years (where fewer are permitted to take options) are smaller, averaging from fifteen to twenty students of superior caliber. To this group, when they graduate, we look for the few who will best qualify for special postgraduate training in psychological medicine.

Content of Psychiatric Option Courses

The content of the consecutive courses in the psychiatric option has been a matter of continual revision and experiment. The details of this process would not be in place but certain points of principle from our experience may be mentioned. The introductory lecture course is always a point of strategic importance particularly for what is to follow. We have had the advantage of experimenting both with a short twelve hour course (obligatory series) and the longer sixty hour course (optional series). I shall speak mainly of the latter, which I teach.

Optional Series

This is a course on general psychology with emphasis on a biological and genetic approach. There is no pretense of making it appear easy to the students and that is not necessary. The concepts are mostly new to them and some effort and reflection on their part is essential. They are told that such effort is expected and that if they are not favorably disposed they should not delay in selecting a different option. We have avoided the plan sometimes followed of accelerating students' interest by commencing with intensive personality study designed to compel them to think of personality analysis in terms of their own experience. There is no doubt that this can be made dramatic, with release of emotion for all, and with requests from some to talk over difficulties in their own lives, etc. Such results have been advanced as evidence of the effectiveness of this approach as a short-cut to the essentials. I am not persuaded that this is sound either as hygiene or as pedagogy. There is no short road to clear understanding, analytic insight, impersonal evaluation, and habituation to thinking in terms of new and unfamiliar concepts and terminology. This is an educative and reflective rather than an emotional process and its accomplishment requires time as well as skilful teaching. There is no royal road to psychological knowledge any more than there is into the fundamentals of physics or biology, and we know that mastery of these requires time even with a background of preparation in high school. In avoiding emotionalism, however, it is not necessary that the presentation be dull and unimaginative.

The main topics of the course are carefully selected and arranged. In this connection we have had helpful conferences with the biologists whose elementary course for these students has been given in the preceding year. By taking the two courses to pieces in conference it has been possible to eliminate certain duplications, fill in some gaps, and elaborate other points from new angles, to the benefit, I think, of the instructors as well as of the students. With neurology and physiology similar relations obtain in this and later courses.

Evaluation of Teaching

An analogous process of integration has been undertaken of the successive courses given within our own department. By mutual consent our weekly staff meetings for the past year have been relieved of routine business and devoted to problems of teaching. Beginning with the elementary courses the instructor in charge is asked to present an analysis of his matter and method in some detail, the kind and amount of factual and illustrative material, how it is presented and examined on, the main objectives aimed at in the course and the minimum a student who passes is expected to know. The latter can then be handed

on to the man who next takes these students in hand, and if this minimum then proves to be lacking, the member of staff who is responsible can easily be brought to account. Our staff are unanimous on the value of this rather obvious procedure, not merely because it stimulates critical evaluation of their own teaching but because of the informal opportunity it affords of exchanging views upon controversial topics. To us all it has revealed how surprisingly wanting in co-ordination our successive courses really were. This is not sensed by the individual instructor; it is the students who suffer.

Similarly in reviewing our laboratory courses, I take the ground that every experiment should be out of the course unless the instructor can give convincing reasons why it should be retained. This requires a clear enunciation of the principles to be illustrated and of their logical sequence leading to the main objectives set for the course. I am of the opinion that in our laboratory courses there is at present a great deal of loose and indifferent teaching and of time wasted on an excess of detail. This is certainly true in psychology and I gather that it is not unknown in other laboratories. Since we can no longer include all details of a science, what is required is a limited number of very carefully selected experiments which will illustrate and relate the major principles to be taught. If the next decade is as expansive in laboratory routine (and time) as the past, we shall be forced to consider this question in order to rescue higher education from its friends.

Course in Abnormal Psychology

The optional courses in the fourth and fifth years offer many problems not yet solved and further modification may be desirable. The lecture course on abnormal psychology at present deals with mental subnormality and with the various personality trends which under stress of constitutional or environmental circumstances may lead to abnormal behavior and social inadequacy. It is mainly a didactic course illustrated by selected case studies. The clinical course in the fifth year stresses mental hygiene work for children with field observation of local measures adopted through the school, the clinic and the home. Both these courses are given by men with psychiatric training and experience, one of whom is a member of our psychology staff.

Awards for Proficiency

Our teaching of psychology in medicine (and also in arts) has recently been strengthened by the establishment of the Dunlap Memorial Scholarships, totalling $1000 per year. These awards have been placed at strategic points in the obligatory and optional courses as shown on the chart. While not large in amount they serve to focus the attention of students on the subject from an early stage in their course. In all cases the awards are made to depend on high general proficiency in

medical subjects as well as on standing in psychology and psychiatry. Another motive we utilize with students in the upper three years is summer employment in Canadian mental hospitals and in other remunerative posts of a temporary character requiring technical psychological and psychiatric knowledge. Preferment for these positions is regularly given to men of highest merit, and particularly those who have taken the psychiatric option. In recommending such students our department keeps in fairly close touch with the outside work they are doing.

The Supplementary Services

The courses indicated in the chart for these branches are special in character but are given for the most part by the same instructors who are responsible for the clinical years of the psychiatric option in medicine. The reasons for closely correlating the training of future physicians and of their lay assistants have been discussed above. The elementary course of sixty hours in the first year is a simplified form of that in the second year of medicine and is given to the various lay groups in common. In this connection an attempt is made to relate the general principles to the respective spheres of activity of these students, which may be work in institutions or in the community. This is done by limiting the general lectures to about thirty hours and taking the remaining hour each week with the groups separately upon a tutorial basis. In the second year the courses are again didactic but with more practical content. In the new four-year undergraduate course for Public Health Nurses, psychology and psychiatry have been proposed for the final year but the content is not yet decided upon.

Conclusions

A few general remarks may be permitted in conclusion from our experience with the above plan of instruction.

First, I am inclined to think that the combination of an obligatory series and an optional series of courses in medicine is desirable. The former alone is necessarily limited in time and scope and it is exceedingly difficult to do justice under such circumstances to the large number of students. Moreover there seem to be some students who are temperamentally unfitted to grasp the real spirit of psychiatric work i.e. to regard their patients as persons who have difficulties they can neither solve nor understand. Whether such men should be encouraged to graduate and practise medicine is another question.[4] In any event the optional plan provides a means whereby those who desire and who seem fitted to prepare themselves more adequately may do so.

4. It is known that the relative proficiency of students in their final clinical year cannot be gauged from their early academic standing, (The Predictive Value of College Marks in Medical Subjects; J. of Educational Research, October, 1925). But even were such prediction possible it would still leave wanting a scientific criterion for discriminating those whom on other grounds we might vaguely feel were unsuited to be general practitioners.

Second, whatever serial arrangement of courses is adopted we shall do well to avoid too formal departmentalizing of our instruction. This feature of modern University organization and the accompanying tendency towards subdivision of our teaching into isolated "subjects" (e.g. normal psychology, abnormal psychology, psychiatry, neuropsychiatry, mental hygiene, etc.) is highly inimical to the central thought in all psychological medicine. Division of labor may be an advantage, though not a necessity; and division of subject matter under titles may be a convenience, provided there is continuity in thought. But it is idle for us rigidly to departmentalize the curriculum and think that the student will not incline to do likewise with his patient; we should not make it more difficult than it now is for him to arrive at the idea of his patient functioning as a whole. The proposals one sometimes hears of reducing psychiatry in favor of psychology (or vice versa), or of adding a short course on mental hygiene, etc. indicate to me a lack of insight on this essential point. Mental hygiene is important as a particular attitude towards every clinical situation and in that respect it is a part of general medicine. If, however, we present mental hygiene to students as a fag-end course of ten hours squeezed in at the last moment of six thousand hours, let us not be surprised if in their minds the matter is dismissed with relief as having just that degree of importance. We don't want, for example, pediatrics plus mental hygiene; we want pediatrics that is good mental hygiene. If we cannot teach a mental hygiene point of view, let us at least refrain from creating a misconception. No one department, academic or clinical, can or should bear the whole responsibility of teaching an adequate mental hygiene outlook to medical students.

Third, whether a scheme of instruction be large or small, let it be gauged not by its intrinsic kind or size but by what the men who take it can do. We expect students on graduation to be able to recognize and deal with most of the ailments appearing in an outpatient clinic (as a sample of general practice); and they can, of course, do a "complete physical." For these same patients do our students know anything about how to conduct a systematic mental examination? Can they detect emotional disturbance, morbid phantasy or a mild delusional trend? When asked to examine an "unmanageable" five-year old, do they know how to discover whether the persistent and objectionable behavior is mainly due to the parent, to a baby sister, to a grandmother, to the child's I.Q., or to hyperthyroidism, etc.? Let us envisage our students at work and then try in the simplest and most direct way to equip them to do their work and also to view their work in the broadest terms of health.[5]

5. Culverwell's definition published in 1848 will still suffice: "He who can see well, hear rightly, can feel his firm purchase on the earth, can fill and empty his lungs, knows the pleasing pain of hunger, and possesses the satisfaction of appeasing it; can sleep soundly—can run or jump—whose memory is obedient to what he stores it with—whose heart is light and whose body carries with it no pain; —is not such a state of existence delightful? for such is health."

Finally, the content and order of the courses as given at Toronto is at best a tentative plan open to discussion at many points. I have not burdened this paper with details of the subject matter, believing that a wider constituency of opinion than that from one center should be canvassed on that issue before a worth-while statement of details could be presented. Unfortunately there is at present little unanimity among our "pure" psychologists, but the practical problems of psychological medicine offer at least one means of bringing us together. If psychology has something to contribute to medicine, as I think it has, an effort should certainly be made to decide upon a minimum content that should be taught to medical students in all reputable schools. Since this is not a matter of common knowledge and agreement among psychologists (or psychiatrists) steps should be taken by those interested to pool their ideas and experience in the attempt to remedy or at least improve the present situation. This end might be furthered by conference,[6] or by a competent investigator visiting each important center and reporting his observations; it should not be attempted by questionnaires.

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6. At the last annual meeting of the Canadian National Committee for Mental Hygiene held in Toronto, Feb., 1928, the teaching of psychology and psychiatry in medicine was discussed by representatives of those subjects from practically all our Canadian medical schools. Diversity of opinion was manifest but also the keen desire to arrive at an effective common basis. On that occasion a permanent committee with a representative for each Canadian school was constituted having as chairman, Dr. Edward E. Ryan, Director, Medical Services for Ontario, Parliament Buildings, Toronto. It is proposed that the teaching staff in each center shall prepare a statement of their views and present procedure, and that when these have been considered the Committee will be called again, probably in 1929.

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Discussion

DR. RAY LYMAN WILBUR, Stanford University, California: This paper illustrates one of our most important difficulties. I particularly want to discuss that part in which Dr. Bott spoke of the overdepartmentalization of our medical work. One of the saddest things in the development of physical examinations was that the body was early discovered to have a lot of holes. One doctor said, "I will take this hole and be a rhinologist." Another one discovered another hole and said, "I will take this one and be a proctologist." "I will take this one and be an otologist," said a third. And so they and their fellows congregated around the holes, looked inside, saw what they could see, and wrote books about it and became specialists.

Now, see how unfortunate that was! They began to get limited viewpoints. They began to look through proctoscopes and otoscopes. The approach was narrow. Much of the body was not seen, and it was not seen as an entity. These observers got control of the medical interest in these body areas, and we are now trying to dig out from the places where they put us by working in the holes. Now comes a period of broader viewpoints. Mental hygiene and new conceptions of the child and its development bulk large as we look ahead.

It is very important for us to get this inclusive personality conception as a blanket over the "hole" ideas. Broad views, fundamental general understanding, must be primary. Early overdepartmentalization, as the speaker has pointed out, makes for narrowness and failure.

I think that in the course of the next fifty years we shall be spending as much energy in this field of mental reactions as we do now in the care of the ordinary physical body. The sooner we get this idea to our medical students, the better. The sooner we see that they have some commonsense psychological training, the better it will be for us and for the future of medicine.

Demands on the Medical Practitioner in the South During a Period of One Year*

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The chief purpose of medical education is to prepare, or, at least, to lay the foundation for the preparation of, men and women to meet the demands made on them in the practice of medicine. While some engage in teaching, research and other medical activities, most of this is done along with more or less practice, either institutional or otherwise. The ultimate objective, therefore, on the part of both the student and the school is preparation of the student to meet successfully the demands of the practice of medicine.

A knowledge of what the demands of practice are should be useful to the student in his pursuit of knowledge to meet these demands. It should also be most useful to the curriculum committee and the faculty in planning and conducting courses, the chief object of which is to lay the foundation at least for the practice of medicine. It has been aptly said that if we are preparing our students to do a certain job, it is well to know what that job will be. If left to their own inclinations, without more definite knowledge of what practice demands, students too often spend much of their time and effort on diseases and conditions that they will rarely or never meet in practice, or watching spectacular operations and the management of rare conditions, largely to the neglect of those diseases and conditions that will be of almost daily occurrence in their future practice.

The medical curriculum in the clinical departments today is determined not so much by the demands of practice, the true objective, but largely by the demands for more time on the schedule and the influence and fighting ability of those at the head of the different subjects in the schools, mostly specialists, to get more time. No doubt the personal factor has had more or less influence on the curricula adopted and promoted from time to time by those committees and groups that have promulgated and promoted them. There is no question but that the specialist possesses superior knowledge and skill in his field, but unfortunately he is likely to overestimate the importance of his subject in medical practice and, as a result, to demand a disproportionate place for it in the curriculum.

Considerable data are available from different sources from which we now have pretty definite information as to the demands for medical service. This was presented in a concise way and discussed in the recent Preliminary Report of the Commission on Medical Education.

*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

(1) While a good part of the data presented were obtained from records of somewhat limited groups, but of large numbers of people, their general agreement substantiates the accuracy with which they indicate the incidence of illness and the demands of practice.

One of the most valuable contributions to the problem of the incidence of illness in a general population group was made by Dr. Edgar Sydenstricker in his study of the general population group in Hagerstown, Maryland. A most valuable contribution to the problem of the demands on the general practitioner and one having very general application to conditions in this country as a whole, was made by Dr. W. C. Rappleye, Director of Studies of the Commission on Medical Education. A questionnaire was sent to all medical graduates of the classes of 1915 to 1922, inclusive, who were confining themselves to general practice in communities of 50,000 or less, in twenty-four states and two provinces in Canada. Over 500 supplied the information requested and the reports indicated that the demands made are very similar in different sections of the country. Slight inaccuracy would necessarily arise from the fact that the study covered only a short space of time in the spring. It would be necessary to continue the study much longer to correct the effect of seasonal variation in the prevalence of diseases.

We have conducted a very similar study extending over a period of one year and including both general practitioners and specialists among the graduates of Tulane Medical School from 1909 to 1922. A good part of the data obtained are here presented as an additional contribution to the question of the demands of medical practice. I wish to express sincere thanks and deep appreciation of the contributions of the large number of our graduates who cooperated with me to make this study possible. I am under deep obligation to Dr. W. C. Rappleye, Director of Studies of the Commission on Medical Education, for analyzing and tabulating the enormous amount of material. Without his help it is doubtful whether it would ever have been analyzed and tabulated so thoroughly.

All the graduates of Tulane Medical School from 1909 to 1922 were asked to cooperate in this study. Most of them were located in Louisiana and the nearby southern states of Mississippi, Texas, Alabama and Arkansas. Smaller numbers were located in the more distant states. For practical purposes the information obtained represents the experience in the Southern states and, therefore, it will be more directly applicable to the problems of the Southern schools. They were asked to send in a complete list of a day's work at irregular intervals of about two or three weeks. Suitable blanks with stamped return envelopes were sent at proper times. They were asked to list every case seen during the day of the report, whether of major or minor importance, and when in doubt, to put down the most probable

diagnosis. Office, house and hospital visits were all reported without distinction.

The survey was continued from April, 1926, to April, 1927. Some physicians reported only one or a few times and then stopped. A good many of these would begin when urged to do so through a special letter sent them. Quite a number continued faithfully throughout the study. A fairly steady stream of reports were kept coming in all the time. There was abundant evidence of the interest taken in the study by those taking part in it and of their desire to make accurate reports.

There were 480 physicians reporting, 303 general practitioners and 177 specialists. The days of practice and number of visits in each group are shown in Table 1. Since undergraduate medical education is concerned chiefly with preparation for the general practice of medicine, the detailed tabulation of the reports of the general practitioners only is given here.

Table 2 shows the grouping of visits reported by the general practitioners. It will be noted that minor surgery constitutes 15.6 per cent of all the visits of the general practitioner. Influenza and bronchitis come next. If we add to this the throat infections, pneumonia and tuberculosis, we have a total of 16 per cent for the respiratory diseases. Venereal disease occupies third place and gastro-intestinal disorders come next.

Table 3 shows the distribution of the contagious diseases with measles at the top of the list and whooping cough next. Table 4 shows the distribution of malignant disease with regard to location, which is quite in accord with the statistics on the subject. Table 5 shows the eye disorders seen in general practice.

Table 6 is a list of the conditions included under the heading of "Minor Surgery" in table 2, for which about one-sixth of all visits of general practitioners are required.

All general practitioners should be prepared to deal intelligently with emergencies and major accidents for which 1.4 per cent of all visits are required. Table 7 is a list of the conditions included under this heading in the present tabulation.

Table 8 is a composite, showing only the highest two figures in the tabulation of each of certain specialties.

Comment

It is believed that the data presented, when combined with other data already available, will be useful as an indication of the demands of practice. There is the greatest difference in the importance of visits for different conditions and there are many other factors besides the number of visits in practice that have to be considered in determining the proportion of time in the curriculum that should be devoted to any particular condition or to any subject. However, while the total

time in the curriculum should not be allotted to the different subjects in proportion to the visits in practice, any course that is conducted without due regard for the demands of practice is likely to fall far short of the real objective.

TABLE 1

Types of Practice of Tulane Medical Graduates

	No. Physicians Reporting	Days of Practice	No. of Visits
General Practitioners	303	3,112	40,207
Specialists:			
Surgery	52	459	7,315
Eye, Ear, Nose, Throat	34	316	4,871
Urology	20	260	8,725
Medicine	17	218	3,497
Pediatrics	17	134	2,178
Obstetrics	15	162	2,426
Roentgenology	7	75	929
Neurology, Psychiatry	6	101	1,095
Dermatology	5	43	1,340
Tuberculosis	4	50	1,712
Totals	480	4,930	74,295

TABLE 2

Analysis of Visits*
General Practice

	No. Cases	Per Cent
Minor Surgery	6,255	15.6
Influenza, Bronchitis	3,047	7.6
Venereal diseases	2,443	6.1
Gastro-intestinal disorders	2,221	5.6
Throat infections	1,622	4.4
Contagious diseases	1,616	4.4
Gynecological conditions	1,548	3.9
Cardio-vascular-renal diseases	1,434	3.7
Obstetrics, visits	1,433	3.7
Syphilis	1,249	3.3
Vaccinations, inoculations	1,161	2.9
Malaria	1,080	2.7
Skin diseases	1,053	2.7
Infant feeding	917	2.4
Pneumonia	739	2.0
Tuberculosis	726	2.0
Physical examination	721	1.9
Appendicitis	660	1.8
Obstetrics, deliveries	564	1.6
Emergencies, major accidents	516	1.4
Pyelitis	476	1.2

*Condensed.

Malignant disease	453	1.0
Post operative dressings	435	1.1
Typhoid fever	403	1.0
Abortion, miscarriage	376	0.9
Eye disorders	371	0.9
Psychoneurosis	361	0.9
Ear disorders	349	0.8
Arthritis	348	0.8
Cystitis	347	0.8
Prostatitis	286	0.7
Diabetes	276	0.6
Neuritis, sciatica	239	0.6
Asthma	231	0.5
Pellagra	192	0.4
Hernia	179	0.4
Thyroid disorders (2-3 toxic)	171	0.4
Anemia	161	0.4
Intestinal parasites (1-2 hookworm)	148	0.3
"Rheumatism"	142	0.3
Hemorrhoids	133	0.3
Nose disorders (chiefly sinusitis)	132	0.3
Varicose Veins and Ulcers	130	0.3
Lumbago	121	0.3
Elective operations	121	0.3
Calculus, urinary tract (chiefly kidney)	113	0.2
Anaesthesia	104	0.2
Tonsillectomy	101	0.2
Osteomyelitis	95	.03
Adenitis, cervical	84	.02
Adenitis, inguinal	82	.02
Erysipelas	76	.02
Rheumatic fever	73	.02
Stricture, urethra	71	.02
Stomatitis	70	.02
Ameobic dysentery	66	.02
Arthritis, gonorrheal	47	.02
Extra-uterine pregnancy	19	.01
Miscellaneous general diseases	1,287	3.2
Miscellaneous urological conditions	160	.4
Miscellaneous diseases of childhood	173	.4
		100.0

TABLE 3

Analysis of Visits
Contagious Diseases Seen in General Practice

Measles	423	Chicken pox	98
Whooping cough	396	Small pox	95
Mumps	212	Dengue fever	51
Diphtheria	146	German measles	37
Scarlet fever	142	Other miscellaneous	16
Total			1,616

TABLE 4

Analysis of Visits

Malignant Diseases Seen in General Practice

Stomach	73	Lung	4
Intestine	61	Mouth	4
Breast	54	Ovary	4
Cervix	39	Prostate	4
Uterus	36	Throat	4
Face	32	Urethra	4
Liver	29	Mediastinum	3
Sarcoma	24	Nose	3
Bladder	9	Oesophagus	2
Skin	8	Pancreas	2
Tongue	8	Testicle	2
Kidney	7	Hand	1
Lip	6	Thyroid	1
Teratoma	6	Vagina	1
Mesentery	5	Location not given	13
Ear	4		
Total	453		

TABLE 5

Analysis of Visits

Eye Disorders Seen in General Practice

Coryza	138	Corneal Ulcer	24
Conjunctivitis	86	Other miscellaneous	67
Refractions	56		
Total	371		

TABLE 6

Minor Surgery

Abscess of tooth, extraction: Abscess of breast.
Benign tumor: Burn (steam, lye, water, powder).
Contusion (leg, chest, arm, back, fingers): Dislocation (elbow, shoulder, finger.)
Fistula in ano: Foreign body in eye, ear.
Fracture (small bones, clavicle): Furuncle (neck, back.)
Infected corn: Ingrowing toe-nail.
Laceration (forearm, hand, leg): Puncture wound (foot, hand.)
Sprain (knee, elbow, wrist, ankle, back): Ganglion, hand.
Sebaceous cyst: Circumcision: Dressing of above.

TABLE 7

Emergency, Major Accidents

Concussion of brain, multiple fractures: Burn, severe.
Fracture of skull, back, pelvis.
Fracture of rib with puncture of lung.
Gun-shot wound (abdomen, chest, hand, spine, neck).
Intestinal obstruction.
Electrocution.
Ruptured gastric or duodenal ulcer—typhoid perforation.
Ruptured bladder.
Serious internal injuries (abdomen, chest, kidney, etc.)
Stab wound (chest, head, abdomen).
Tetanus.
Traumatic amputation (arm, leg).
Ovarian cyst, rupture.
Strangulated hernia.
Throat cut (suicide attempt).

TABLE 8

Analysis of Specialist Visits—Highest Two Percentages

Surgery (52): Gynecological Conditions 16.8 per cent; Minor Surgery 16.7 per cent.
Urology (20): Gonorrhea, 40.2 per cent; Prostatitis, 16.2 per cent.
O. L. R. (34): Throat Infections, 22.5 per cent; Sinusitis, 12.8 per cent.
Internal Medicine (17): Gastro-intestinal Disorders, 14.3 per cent; Influenza, bronchitis, 8.4 per cent.
Pediatrics (17): Infant Feeding, 36.3 per cent; Throat Infection, 11.8 per cent.
Obstetrics (15): Obstetric Visits, 57.8 per cent; Gynecological Conditions, 11.1 per cent.
Roentgenology (7): Radiograms, 48.3 per cent; Radium Therapy, 14.9 per cent.
Neuro-Psychiatry (6): Psychoneuroses, 24.3 per cent; Psychoses, 16.4 per cent.
Dermatology (5): Acne Vulgaris, 72.5 per cent; Tinea, 8.8 per cent.

The Problem of Third Year Medical Teaching*

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The problem of third year medical teaching is in somewhat the same position as the problem of teaching therapeutics and of applied anatomy in medical schools. Many methods have been tried and most have failed, except committing to memory Osler's textbook of medicine, which is considered satisfactory by some. However, speaking from my own experience as a student, and from the reactions of other students, such a method not only is time consuming and a bore, but the information thus obtained to pass quizzes and examinations is not retained as working knowledge. There are several reasons for this. In the first place, pure memory study without objective and reason is not retained; secondly, the multiplicity of subjects to which the student must be introduced in his junior year leaves him in a maze in which he can no more remember what he studies than he can remember the names of many people to whom he might be introduced in one evening; thirdly, such a method violates the rules of modern education which demand that the student's interest must first be aroused and study maintained by direction from this beginning. And fourthly, third year medical students are mature men and women with college degrees and it seems rather ridiculous to subject them to textbook assignments and quizzes when they are in a position to begin graduate study. These objections to the time honored textbook method of junior clinical medicine and surgery have led to several changes at the University of Nebraska College of Medicine which I wish to report at this time.

Junior Clinical Pathology

The first variation from the older methods of medical teaching was the establishment in 1920 of a junior course in clinical pathology, which served as an introduction to all branches of medicine and surgery. This course has been continued and is not the usual course in laboratory diagnostic methods, nor systematic pathology, as taught in many schools. As far as I know, there is no similar course in any other school. It consists of symptom analysis on the basis of systemic pathology. The lectures take up clinical pathology by systems, endeavoring to show the relation of bacteriology and pathology, anatomy, physiology and chemistry to the symptoms of systemic diseases, and to explain the sequence of events from acute to chronic diseases. Under the respiratory system the epidemiology,

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specific pathology and complications of the various pathogenic respiratory micro-organisms are emphasized. Streptococcus sore throat is taught as an orderly sequence of endemic and epidemic events from simple follicular tonsilitis through septic sore throat to scarlet fever. Pneumococcus pneumonia is taught as an endemic and epidemic lower respiratory infection, varying from a simple bronchitis or chest cold through pneumonitis or grippe to lobular and diffuse pneumonia, of which typical pneumonia is only a complication in young adults during the bronchitis stage. Streptococcus pneumonia is taught as a series of events originating from post-measles bronchitis and passing through stages of purulent bronchitis, pneumonitis, lobular and diffuse pneumonia, with the special complications of pleural empyema and lobular abscesses due to the rapid lymphatic spread of the hemolytic streptococcus and its tissue destroying qualities.

Nephritis is presented on the basis of functional disturbances due to pathology in the renal blood vessels, glomeruli, tubules, or interstitial tissue. The mechanism of prostatic hypertrophy and obstruction is presented on an anatomical basis with the consequent acute and chronic ascending urinary infection and kidney pathology. The gastro-intestinal system is dealt with on a physiological basis, emphasizing the results of infection and obstruction. The cardiovascular system is presented from the viewpoint of infectious damage and resultant circulatory disturbance, acute and chronic, emphasizing the types of endocarditis, hypertension and the mechanism of cardiac failure. Other systems are dealt with likewise, emphasizing those things in which cause and effect can be related in pathology and symptoms and omitting much of insignificant or uncorrelated medicine.

Case History Method

The real instruction or rather the study by the student occurs in the laboratory of the course, in which two afternoons a week are spent. The case history method of presentation and study is followed, using protocols of hospital records with post mortem reports and corresponding gross and microscopic pathology for each case. An analysis of all symptoms and physical or laboratory findings is required of representative cases covering all chief divisions of each system. The laboratory study is in reality a conference period in which clinical instructors, pathologists and students participate in discussion of the relation of pathology to symptoms and reference frequently is made to such books as Osler's Medicine, Sahli's Diagnosis, Hewlett's Pathological Physiology, Cabot's Physical Diagnosis, Macallum's Pathology, Delafield and Prudden's Systemic Pathology, and the usual textbooks on bacteriology, anatomy and physiology. Three to five books are frequently seen at one student's desk, and

notes are made in explanation of the case record as the symptoms appear. The study of pathology is not limited to the organs or system primarily involved, but must include complications which appear in other parts of the body.

This course serves a double purpose at Nebraska. It serves as an inductive introduction to all branches of medicine at a time when the student is liable to be groping blindly under a half dozen or more instructors, each teaching a special branch. It also serves as a course which correlates the laboratory with clinical medicine, this including not only pathology and bacteriology, but anatomy, physiology, and chemistry, wherever they have a direct bearing on symptomatology. A common remark by students has been that they have learned more medicine in this course than in all the remainder of their junior medical courses. The requirement of the instructor is that he be qualified, not only in the laboratory, but also in the clinical branches of medicine and surgery and have a primary interest in finding the cause of symptoms in disease and interpreting the sequence of events leading from acute to chronic conditions.

Reduction of Didactic Hours

The next change in the curriculum, since this course in clinical pathology furnished such an effective introduction to medicine and surgery, was a reduction in the number of didactic hours devoted to these subjects. Section quizzes were maintained to prevent too abrupt a transition from a heavy didactic schedule to some freedom of time and study. This made some improvement in the clinical teaching but it still lacked interest and direction by case study. Consequently, last year it was decided to take a more radical step and assign the third students to clinical clerk service in the University Hospital in place of the fourth year students. To the surprise of nearly everyone the juniors did better ward work than the seniors. They seemed more interested and willing to work and, although at the beginning they needed more personal direction, they soon submitted very creditable case records. At the end of the year, for the first time in my experience, several juniors volunteered the information that their work had been both interesting and instructive and that they felt well satisfied with the year. This was enlightening and it was decided to go a step further this year in centering the third year medical and surgical work about the clinical clerk service. Textbook assignments and quizzes were made elective, with the result that sixty-one students from a class of seventy elected sectional quiz work under former popular quiz masters. There evidently was a desire for such work, and it is questionable if it had not better be retained as required for all students, possibly allowing a choice of quiz masters. The clinical clerk service

was better organized, requiring two hours attendance daily between 9 and 11 A. M. to work on the wards and meet the attending staff on their regular ward rounds. Acceptable case records are the first requirement in this ward work, such that they can be corrected and maintained as hospital records. In addition three subject theses are required each semester dealing with some phase of the clinical cases each student has been assigned. Record of the student's case assignments is kept on short history cards for each case studied or seen at clinic or rounds. These are handed in every eight weeks and form the basis of judgment of fields covered by each student. Grades are based upon the record of satisfactory ward work, personal interviews with these students covering their case reports, and the subject theses.

Duties of Senior Students

This paper is hardly complete without an explanation of what has been done with the senior medical students, since the juniors supplanted them in the hospital wards. The senior students have been placed on the dispensary service, where they are required to spend four hours, four days a week, actively engaged in the examination, diagnosis and treatment of the dispensary patients. The cases are each assigned to two students who keep this assignment for return visits as long as they are on service in this department. A very important part of the dispensary work is the outcall service, which was reported on in the October, 1926, BULLETIN of this Association. Over two hundred new calls for home visits are received each month and a great many more calls than this are actually made, since the student is required to follow his case by daily visits if indicated, until the patient is well or the student goes off the service. Eight to twelve students are assigned to the work and are excused from dispensary assignment, since they usually put in more time each day than the dispensary requirement. I have already called attention to the improvement and development of the outcall service coincident with making it a senior responsibility. There already are indications that the same will be true of the dispensary service with the seniors assigned and capable of taking some responsibility in the care of patients.

Elective Courses for Seniors

Further change has been made in the senior schedule which may be worthy of report here. The reorganization of the two clinical years made necessary a great reduction in the required hours and courses. The seniors have long been burdened with a considerable number of didactic courses for which little or no studying was done and little learned. It was decided to make most of these courses elective, hoping to serve a double purpose, to give the student some

initiative in the selection of courses, and to stimulate some of the instructors to put more interest into their courses. The outcome of this selection of courses has been interesting and quite encouraging, I believe. The senior students have elected an average of 127 hours, the registration varying from 102 to 185 hours. Several seminar courses were planned and arranged by the students. Preceptor work under any member of the clinical faculty, either in office, hospital, or industrial practice is permitted. The senior schedule was arranged so that as few conflicts as possible occurred in the elective courses. The final check on senior students is a comprehensive committee examination, instituted this year, which will be required before recommendation for degrees. Failure in this examination will require repetition of the senior year, and failure a second time, dismissal from school.

In conclusion I wish to say that I do not believe that the report I have given can be considered as a wreck of the curriculum. It has developed gradually over a period of several years, with an increasing interest and initiative on the part of the students. It has gradually invaded the clinical years until even the seniors were prepared to seek opportunity rather than avoid work, when they were given some freedom of choice. An important factor in the preparation of third year students for ward work has been the placement in the second year of introductory courses in medicine, pediatries, obstetrics, physical diagnosis and laboratory diagnostic methods. It may be desirable also to place the present third year clinical pathology into the second year, to give a better preparation for ward work. The final plan and result of course is not yet available for report, but there is no inclination to return to the old schedule. There probably are some errors and weak places in the plan, but these can be corrected and strengthened as they are found. I believe the move at least will result in some progress towards better clinical teaching.

An Experiment in the Teaching of the History of Medicine*

J. M. H. Rowland
Dean, University of Maryland School of Medicine, Baltimore

Every medical school has hoped to put before its students an attractive course in medical history—and at one time or another, most schools have tried it. The result has usually been, if not actual failure, at least a falling far short of the desired goal. In the attempts coming under my own knowledge, all have been lamentable failures. Medical societies have also tried to stimulate interest in medical history among their members but, except for short periods, the interest is usually not sustained and the sessions of the sections on medical history consist of spasmodic and irregular meetings, poorly attended.

Course Optional

During the session of 1926-1927, the University of Maryland asked Dr. John Rathbone Oliver, the court psychiatrist of Baltimore, and known to some of you as the author of "Fear," "Adventures of Cigarette" and many other publications, to give a course of lectures on the history of medicine to the students of the medical department of the University and any others who wished to come. Invitations were sent to the physicians of Baltimore and three of the classes had an opportunity to attend the course. We found considerable difficulty in fitting the lectures into a crowded curriculum and, finally, were forced to hold the lectures at 5:00 p. m., a time of the day when students are tired out and at a period of the year when the classes were getting ready for final examinations. Attendance was not compulsory and one class was entirely unable, on account of the schedule, to attend.

In spite of the drawbacks mentioned, the attendance was so gratifying and the interest so sustained that I felt that a brief report on the subject matter and presentation of the course might be interesting.

Extent of Course

The course consisted of only twelve lectures, and it would seem at first sight that the subject matter is too comprehensive to be carried in twelve lectures, but it must be remembered that these lectures were given to stimulate students and graduates into interest concerning a subject of which they were almost entirely ignorant, and were not intended for persons who were already somewhat conversant with it.

*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

The lectures were necessarily and intentionally somewhat sketchy, but it was quite surprising how considerable an outlook upon the early history of medicine was obtained in this short period. If you will examine the synopsis, you will miss many of the things which you might expect to find discussed and yet the subjects covered seemed to present a fairly consecutive story of early medicine and to correlate the progress of medicine with the progress of civilization and to show in an orderly way the relation of the development of medicine to the general cultural advancement of the race.

Nature of Course

Dr. Oliver's outline gives the nature and character of this course in the following words:

OUTLINE OF A SERIES OF LECTURES ON THE HISTORY OF MEDICINE

"In giving these lectures, three important elements were kept constantly in mind. The hearers had not only to be given matter to interest their minds. They had to be given something that they could see and other things that they could touch. In other words, the senses of touch and vision were brought into play in order that the lecture might not be a monotonous appeal to the intelligence alone. At the beginning of each lecture, a large number of books were brought into the lecture room and were distributed to the hearers at appropriate points in the lecture. Each listener had in his hands all the important histories of medicine, each hearer handled one or more editions of Hippocrates, of Galen, of Avicenna, of Paracelsus, etc.

The last ten minutes of each lecture were given to the lantern slides. These slides were all fresh material, made to order for each lecture by Mr. R. M. Reeves, the official photographer at the surgeon-general's office in Washington. By means of these slides, for instance, we were able to show the development of anatomical drawings from the earliest preserved medical manuscripts down to the earliest copper plates. We were also able to show photographs of all the important Greek and Latin manuscripts, as well as the illustrations from such important books as Ketham's Fasciculas. In dealing with the various medical authorities, we attempted to give from each one, one or more striking excerpts that would help to fasten the name of the author in the hearer's memory.

The first lecture dealt with general bibliography and with a general historical review of the periods through

which medicine passes in every great civilization. The next two lectures were given to Folk medicine, to the medicine of the Egyptians, of the Babylonians, of the Jews and of the other older civilizations. Two lectures were devoted to Greek medicine, one to Roman, two to the school of Salerno, the rist of the universities; two to the middle ages and one to the beginning of the revival of learning. We attempted to carry the hearers from the earliest beginnings of medical thought down to the period at which modern medicine really begins, with the anatomy of Vesalius. If one will keep in mind that one may appeal not only to the intelligence, but to the sense of vision as well, then there will be no difficulty in making interesting a course in the history of medicine."

In none of the lectures were there less than 100 in attendance and there were as many as 200 present at some of them. Altogether, we felt that the results obtained had so satisfactorily justified the experiment that we have arranged to have it continued and a systematic course in the history of medicine will, no doubt, become a permanent addition to our curriculum.

SYNOPSIS OF LECTURES

LECTURE 1.—Introduction to bibliography of the subject. Discussion of the periodicity of medical history as seen in all the great civilization that the world has known. Looking upon medicine from a historical standpoint, we must ask ourselves in what type of period are we living today. Is it a period of decadence, after which some new and surprising discovery is to begin an entirely new period?

LECTURE 2.—Primitive Medicine and Folk Law. Principles of primitive medicine; surgeon, surgery, showing of prehistoric skulls with surgical incisions. Assyrio-Babylonian medicine. Its general background. The code of Hammurabi. Brahminic medicine. Teachings of the Rig Veda. Beginnings of the searches for antidotes. Iranian medicine. Zoroaster. Examinations necessary before practice. Egyptian medicine. Three important periods. The three important papyri. Importance of purgations and enemeta. Prophylactic medicine. Jewish medicine. Importance of the hygienic rules. Treatment of lepers. No definite dividing line between primitive medicine and the beginning of medical science.

LECTURE 3.—Greek Medicine. The early Minoan period. Excavations in Crete and at Mycenae. Anatomy in Homer. The Dorian invasion. Homeric medicine. Temple medicine. Epidaurus. Aesculapius. Telesphorus. Meaning of the snake and the staff. Medical schools. Professional and temple medicine distinct from one another. Influence of Greek philosophy. Prehistoric medicine. Names of the known prehippocratic physicians. Medical guilds. The Asclepiadae.

LECTURE 4.—Greek Medicine continued. Description of Greeks in the Fifth Century B. C. Description of Athens. Hippocrates. The Hippocratic problem. Three traditional biographies. The Hippocratic Corpus. Its contents. Manuscripts and early editions. Reading of extracts from those books in the Corpus supposedly Hippocratic. The Hippocratic oath discussed in detail.

LECTURE 5.—The humoral pathology. Famous physicians after Hippocrates, Historical changes. Shifting of the center of civilization to Alexandria. Beginning of medical sects. Alexandrian medicine. Erasistratus and Herophilus. Outline of most important medical sects. The dogmatists. The

Empiricists. The Methodists. The Encyclopedic school. Pnomada school. Ecclectic school.

LECTURE 6.—Greek Medicine in Rome. Early forms of Roman medicine. Importance of slave physicians. Asklepiades. Important member of the Methodist school. A materialist. Ideas of the Strictum Laxum and Mixtum. Themison. Aretaeus. Dioscorides. Soranus and Caelius Aurelianus. Outline of social and legal position of physicians at different periods of Roman history. Galen. His life; his teachings; his writings.

LECTURE 7.—Fall of the Roman Empire. Disintigration of civilization in the Western Empire. Medicine in Constantinople. Mohammed. The Rise of Islam. Contact of Islam with the Nestorians in Persia. Monk medicine in the West. Ending of the Greek medical tradition in the East with Paul of Aegina and Sethus. The Empire of Islam. The two great Caliphates. New figure in history of the Arabian physician. The Eastern Caliphate. Rhazes. Isaac Judaeus. Ali Abbas. Avicenna. Western Caliphates. Albucasis. Averroes. Maimonides. Contacts of Islam with Europe. Greek medicine reaching Europe through Arabian translations of Greek manuscripts. Great Arabian medical schools and hospitals.

LECTURE 8.—The Middle Ages. The School of Salerno and Montpelier and the founding of the universities. The rise of scholasticism. Albertus Magnus and St. Thomas Aquinas. General tenor of life in the early middle ages. Important position of the Jewish physicians in spite of social restrictions. Monk medicine in detail. Salerno. Difficult period for the historian. Early Salerno. Few definitely known names. Trotula and the woman physicians of Salerno. Middle period. Constantine, the African. His life. Translation into Latin of Arabic medical works. The Regimen Sanitatis of Salerno. Its history. Extracts. The surgery of Salerno. Roger of Parma. Saliceto. Montpelier. History of the school. Jilles de Corbeil. Rabelais.

LECTURE 9.—Extracts from writers of the three periods of Salerno. Medical practice in the middle ages. Uroscopy. Venaesection. Importance of astrology. Pharmacology. The horn of the unicorn and extract of mummy.

LECTURE 10.—Transition period between middle ages and the revival of learning. The humanists. Erasmus. The medical humanists. Linacre. Fuchs. First writer of an institutio medicinae. Frascatorius. His theory of contagion. The question of the origin of syphilis. Alchemy. Influence upon medicine. Review of the surgery of the middle ages. Doctrine of laudable pus. Medical practice illustrated by quotations from the Rosa Medicinae of John of Gaddesden. Summary of anatomy of the teaching of anatomy from Galen to Vesalius. Importance of Galen's authority. History of the doctrine of infection. Brief outline of the history of epidemics.

LECTURE 11.—The revival of learning. Sketch of Europe before the revival characteristics of the last centuries of the middle ages. Position of the church. Events contributing to the revival of learning. The invention of gunpowder. Capture of Constantinople by the Turks and the invention of printing. The first printing presses. What are incunabula? Demonstration by lantern slides of incunabula. Paracelsus. His life and theories. Leonardo da Vinci. Andreas Vesalius. His life; his writings and his influence.

CONCLUSION.—Among many lessons to be learned from the history of medicine note three. (1) Great men seldom considered great by their own generation. (2) Ultimate victory arises out of apparent defeat as in the lives of Galen, Constantine, the African, Vesalius, etc. (3) History of medicine is the means that brings us in contact with the lives of our predecessors both great and small, both known and unknown. Importance of keeping in close touch with the lives of "Our Fathers of Old." Reading of the last three verses of Kipling's poem entitled "Our Fathers of Old."

Discussion

DR. LOUIS B. WILSON, Graduate School of the University of Minnesota, Rochester: We began in the Graduate Medical School of the University of

Minnesota last year in a small way, a six-year program of lectures on the history of medicine by eminent men from outside the faculty. We expect to cover, thus, thirty-five or forty lectures in the next five years. After the second lecture, several of the students told me that they had formed a medical history society for their own personal study, that is, a continuation study of what had been given in the lectures, and that the society already contained a little more than 10 per cent of the men who were there. This indicates that they need to know more about the history of medicine.

DR. J. M. H. ROWLAND (closing): What Dr. Wilson has reported is exactly what is happening with us. After these lectures, the same sort of interest was shown, and Dr. Oliver, in his prospectus for next year, states that he will be glad to establish a permanent historical group to develop further interest in the study of medical history.

Teaching of Pathology at McGill University*

HORST OERTEL
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I have taken the liberty to put into your hands a short printed account of our teaching of pathology at McGill in order to save your time and to qualify the printed word with only a few spoken ones.

The teacher of pathology, just as the investigator, is faced by two genuine difficulties. First: his science, more than any other, stands at present on a very insecure, constantly changing and shifting basis. Its present values and classifications have little or no bearing on a scientific understanding; that is, on causal connection of things. I may remind you only, as flagrant examples, of the current conceptions of immunity and inflammation which are as unscientific as one may imagine, the naive classification of thyroid lesions, and many others.

Arising out of this first difficulty is, secondly, the problem, how to teach the student not only to understand and command the present structure of Pathology, but to follow it in the future. For, if he is to be an intelligent practitioner, he must be able to keep pace with its advances, at least during his own generation.

My honest opinion is that we have not succeeded in overcoming either difficulty, and really dismiss our students poorly prepared in Pathology. My experience, and I dare say the experience of others, is that the student is neither able to grasp and intelligently judge the present knowledge and gaps of knowledge, nor to follow advances in anything like a critical spirit. When I converse today with a practitioner of only ten years' standing, I find that he is quite at a loss, and even disinclined, to follow the advances in pathology since his graduation, except in what is suggested to him by others as a useful, practical adjuvant or trick to his immediate diagnostic or therapeutic needs. When one looks at the present therapeutic humbug with proprietory articles of leading drug houses, the absurd or grotesque excesses to which scientific findings are immediately standardized and carried into practice and marketed, one cannot but be amazed that such things are still possible under our present much heralded scientific instruction; and equally amazing is the lack of any trained critical spirit among the bulk of practitioners. Ask the practitioner who has graduated ten years ago what his idea of the nature of the Wassermann reaction is, a reaction which he employs daily and on which many still depend diagnostically; he will be quite at a loss to answer, not because he is scientifically uncertain (as he should be), but because from his student days he has felt that he is confronted by a hopeless "highbrow" reasoning in a subject towards which he had better take a Mephistofelean

*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

attitude now and forever. And he indulges in this frame of mind toward other problems of pathology. That is the real "Doctor's Dilema": to understand his scientific armamentarium. Now, if Pathology is really going to count in the education, and not only in the technical training of the physician and surgeon, it must be differently approached and taught. Some time ago I wrote an article on "Philosophy in Medicine,"[1] in which I emphasized some of these deficiencies in modern medical science and education. I indicated in it that an appreciation and valuation of what is taught—that is, the opening of the windows of the student's mind, not a crude empiricism—can only be reached by a philosophical, critical attitude, and a logical approach to the data at our hands. I am delighted to see that a similar conviction is forcibly expressed by Professor Ricker in his last stimulating monograph on "Pathology as a Natural Science," in which he devotes a whole section to an exposition of logical reasoning and to the theory of knowledge in relation to pathological conceptions, with a forceful criticism of the present meaningless jumble of terms and ideas. Furthermore, a surgeon, Sauerbruch, has recently also emphasized the urgent necessity of philosophical, logical training even for the practitioner of medicine, in order to clearly recognize and distinguish between the contents of the basic sciences of medicine and the art of healing. The still too frequent error is to treat Pathology from the start as a medical or premedical subject, purely from the patient's standpoint.

Consequently, I now divide the instruction at McGill into two main divisions: the first is largely cultural and deals with the formulation of scientific causal concepts, that is, with an exposition of Kant's critical methods; it traces the historic evolution and the inherent weaknesses of present pathological knowledge, and then endeavors to introduce the student to the subject from the standpoint of a general scientific orientation. I desire to develop in him scientific, critic and comparative breadth of vision rather than memory of a dogmatic exposition of present structure for practical diagnostic purposes. I impress upon him the importance of finding causal connections of pathological processes rather than playing with diagnostic, meaningless terms; that he is dealing in Pathology with a very young, quite unfinished, and constantly moving intellectual organism, whose knowledge is useful, but cannot be directly applied as a fixed mental equipment to the practice of medicine; moreover, that medicine is not *applied* Pathology but *based* on Pathology; and that such a hybrid as "clinical Pathology" does not exist as a branch of science. This method of approach I have followed in my recent book,[2] which I call a "guide" not a "textbook." The student thus appreciates from the start that he must learn, not by memory of textbook and lecture statements, or even by demonstrations, "with his mind

1. The Scientific Monthly. November 1924. Vol. IX, pp. 512-519. Cf. also my address on "The Biological Sciences and Philosophy." Resonf Publ. Co., Montreal.
2. Outlines of pathology in its historical, philosophical and scientific foundations. Resonf Publishing Co., Montreal.

resting," as Kant puts it, "on the bolster of obscure qualities," but by formulating and asking himself intelligent questions, and facing, not side-stepping, unclear issues. He is discouraged to flourish with ready-made diagnostic answers which will satisfy only a State Board of Examiners.

With this intellectual training and the attitude of Lord Bacon, that "doubt is the first step to truth," and "discard of the idols of the market-place," the student approaches, secondly, in the advanced courses, the more practical, concrete aspects of Pathology in relation to medicine and practice, but even here Dr. Meakins and I agree to bring out in our joint conferences difficulties and uncertainties with greater emphasis, in order to stimulate the student's mind, than to expect him to possess in the end a set of standardized practical equipment for his practice. I deem it a greater success of teaching to turn out an uncertain, but properly inquiring mind, than a mind certain of, and filled with temporary knowledge, but fixed and sterilized.

Appendix

Detailed Statement of the Teaching of Pathology at McGill

(Courses arranged in the order in which they are given)

1. An introductory, preparatory course of about 18 lectures and demonstrations in the Spring term, dealing with the general foundations of diseased life under an exposition of (a) heredity, (b) somatic development, (c) physical and chemical environmental influences, (d) principles of parasitism and infection. (Second Year).

2. General pathology and pathological morphology in its historical, philosophical and scientific foundations, 40 lectures, dealing with (a) the historic development of the conception of disease and its relation to general history and to that of science, (b) the relation of theory of knowledge and philosophy to science in general and to biology and pathology in particular, especially as they touch upon the value of definitions and classifications in pathology in causal connections and metaphysical interpretations, (c) pathogenesis: the anatomical lesions themselves, their nature and functional results, with constant reference to present lack of causal knowledge and weaknesses of classifications. This is supplemented by 80 hours laboratory work in general pathological anatomy and histology, following the lectures. (Autumn and Winter terms of Third Year). This course is also open to students of other faculties, graduates and candidates for higher degrees of other faculties (science, agriculture, etc.).

3. Special pathology is divided into chapters dealing with the various systems and organs of the body. These are presented by members of the staff who have specialized in them, in a total of about 60 lectures and 30 laboratory demonstrations. (Spring term of Third Year and Autumn and Winter terms of Fourth Year). These chapters are covered with special reference to their practical application. They include: the circulatory, respiratory, digestive and renal systems, the haematopoietic system, the organs of internal secretion and neuropathology. The weight is always put on the anatomical, structural side, but with regard to disturbed function. Effort is made to cultivate and to refine and clarify visual concepts of pathological processes and lesions.

4. Practical course in pathologic-anatomical technique and methods of diagnosis. Once a week throughout the Session for 1½ to 2 hours. It includes the practical demonstration of autopsy technique and its protocol, for scientific and medico-legal purposes, before the students of the Third, Fourth and Fifth Years in the pathological amphitheatre. Two senior students, in rotation, are called to the floor and required in questions and answers with the instructor, before the whole class, to develop the anatomical diagnosis and discuss this in reference to the case as a whole and its important clinical evidence. At the same time organs and slides are demonstrated and later, in the side (conference) room, are thrown on the screen or put up for microscopic inspection.

5. Supplementary course in autopsies before and with groups of senior students at both hospitals. Each student is required to witness and take part in at least 6 autopsies. (It is encouraged to do this work during the term holidays and in the summer).

6. Weekly conferences on medical, surgical and other cases which have come to autopsy and on material removed at operations; by the clinical and pathological staffs with groups of senior students, in both hospitals. (Whole Session.)

N. B.—In courses 1 and 2 the weight is thrown on the scientific and cultural side; in 3 to 6 on the medical, practical, concrete issues. In the laboratory exercises the student is encouraged to do as much as possible himself and with the least amount of technical appliances. While boxes of mounted and stained specimens are distributed, he is urged to prepare at least a number of fresh, unstained and stained specimens himself, and these are used, wherever possible, to illustrate lesions. An immediate correlation between the gross and microscopic pictures is obtained by group demonstrations of corresponding gross material, while the microscopic examination of slides is in progress.

Experimental work is not carried into the undergraduate course to any greater extent than is necessary for an understanding of common anatomical lesions, as it is considered that the "natural experiment" of the disease is the more valuable for the beginner, and "pathological physiology" is at present divided between the department of experimental medicine, under the Professor of Physiology, the chairs of medicine and biochemistry. These latter cover pathological chemistry.

The pathological museum collection is of three kinds: (a) specimens mounted in colors in glass jars; (b) hand specimens, unmounted and kept in crocks, (c) material for research. A and B are used for demonstrations in connection with didactic, systematic lectures (epidiascope) and in group demonstrations (in the classes of pathological histology); principally, where it is desirable to show a series of lesions or progressive steps of changes, and where the method of mounting throws lesions into typical relief. Independent museum instruction is not carried on, and for advanced students fresh autopsy material is used almost exclusively with only occasional reference to museum preparations. But students are individually encouraged to rehearse their knowledge by independent use of museum material.

Museum Technique

Selected material from the operating and postmortem rooms (after proper blocks have been taken for microscopic examination) is sent to the museum laboratory, where it is immediately accessioned in a bound book. A fibre tag[1] is attached to each specimen with the accession number stamped on one side and the autopsy hospital reference or donor's name on the other, thus facilitating the finding of material by either accession, postmortem, or hospital reference number. The inexcusable museum sin is the loss of a reference, and,

therefore, at no time is material allowed to be without its tag directly attached to it.

Color Preservation

Material must be received *fresh*, and not allowed to soak in water or weak formalin. A modified Kaiserling solution is used.[2] After preservation, material is carefully gone over and that suitable for the museum is carefully dissected and mounted in rectangular jars.[3] A card catalogue of all material is made, with three copies for each individual specimen, thus enabling lists to be kept in different parts of the building where they are accessible at any time when specimens are required for a lecture or class. Hand specimens, of which a large number are always kept, are listed on red cards placed amongst the general museum index.

Mounted or hand specimens may be obtained at any time by members of any branch of the Medical Faculty, for ward clinics or hospital demonstrations; in fact, museum material is issued for teaching purposes as are books from a library. All outgoing and incoming material is carefully listed and checked in a bound book with a duplicate carbon.

Museum jars are imported direct from Germany, through the following agents: Hughes-Owens Co. Ltd., 247 Notre Dame St. West, Montreal, and the Fisher Scientific Co. Ltd., 204 McGill St., Montreal.

The color scheme of the museum has been carefully worked out. A shade of grey, giving the greatest amount of light with the least amount of reflection and light absorption, has been used.[4] The cases are painted the same color as the walls so as to make them as inconspicuous as possible, and have been supplied by the J. A. Elder Co., Notre Dame St., Montreal.

References

1. Concentration of Museum Specimens, Madge Pollock, Mayo Clinic, Rochester, Minn. Bull. No. 10 Internatl. Assn. Medical Museums, p. 34.
   Tagging of Museum Specimens, E. L. Judah, McGill University, Montreal. Bull. No. 4, Internatl. Assn. Medical Museums, p. 45*. The latter part of this method only is used, paraffin tape being replaced by the Pollock tag.
2. Modification of the Kaiserling method for preserving gross specimens, Richard Lundquist, Mayo Clinic, Rochester, Minn. Bull. No. 11, Internatl. Assn. Medical Museums, p. 16.
   Technique of the Preservation of War Material, E. L. Judah, McGill University, Montreal. Bull. No. 7, Internatl. Assn. Medical Museums, p. 21*. General technique only used; fluids are replaced by the Lundquist method.
3. Sizes for Square Museum Jars in use at the Medical Museum, McGill University, E. L. Judah, McGill University, Montreal. Bull. No. 5, Internatl. Assn. Medical Museums, page 89.
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4. Bull. 41 c Engineering Dept. National Lamp Works, General Electric Co.
   Museum Classification, Maude E. Abbott, Bull. No. 11, Internatl: Assn. Medical Museums, page 78.
   Exhibition Refrigerator, W. M. L. Coplin, A Teaching Museum, Bull. 6, Internatl. Assn. Medical Museums, page 13.

Women in Medicine*

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Last year I presented some figures derived from a study of 535 questionnaires returned by women graduates in medicine in two time periods, 1905-1910 inclusive, and 1912-1921 inclusive.

As the questionnaires returned represented but 29 per cent of those sent out, at Dr. Zapffe's suggestion I sent out follow-up letters in an effort to secure additional returns and so add to the reliability of any conclusions to be drawn from the tabulated figures. As a result I succeeded in raising my returns to 710, or 36.6 per cent of questionnaires sent out. The additional data have been worked into the tables of last year and I am presenting today, briefly, the corrected results in certain directions which seemed of particular interest.

In general, the additional figures changed the percentage results very little, and that is the chief reason for this further report. A 25 per cent increase in total returns, without producing conspicuous changes in relative figures, ought to increase confidence in the trends indicated by those figures.

Types of Medical Practice

The corrected figures in regard to types of medical practice engaged in by women show: In the 1905-1910 group: General practice, 55.8 per cent; special practice, 37.7 per cent; not practicing, 6.5 per cent.

The general practitioners may be subdivided as before into (1) those occupied entirely in general practice, 16.1 per cent; (2) those adding to general practice some special work, 39.5 per cent.

In the 1912-1921 group: General practice, 40.9 per cent; special practice, 50 per cent; not practicing, 9.1 per cent.

Subdividing the general practitioners we have: General practice, 10.4 per cent; general practice plus specialty or other work, 30.5 per cent.

I have thrown these figures for the 1912-1921 group into a table with Dr. Weiskotten's figures for his 1920 group, which though they included women with the men, actually involved only 2.7 per cent women, and so are, as a matter of fact, dealing largely with men.

TABLE I.
Comparison of Data on the Practice of Men and of Women

	1920 97.3 Men plus 2.7% Women (Weiskotten)	1912-21 Women 100% (Tracy)
General practice	22.9%	10.4%
General practice plus specialty or other work	40.5%	30.5%

*Read at the Thirty-eighth Annual Meeting of the Association held in Montreal, Oct. 24-26, 1927.

Limited to specialty	36.1%	50. %
Not practicing	0.5%	9.1%

Two contrasting points attract attention, *first*—that fewer women, proportionately carry on a general practice; and *second*—that a larger pecentage of women cease to practice.

As to the types of special practice engaged in, correcting the former figures with the additional data, and considering the 1912-1921 group only, it was found that a slight decrease, less than 3 per cent, must be made in the percentage of those engaged exclusively in the practice of pediatrics, internal medicine, gynecology and obstetrics, otolaryngology and opthalmology, and pathology; and an increase of about the same magnitude in the fields of psychiatry and of public health.

The corrected tabulation, thrown into a table with Dr. Weiskotten's figures for his 1920 group, is given below.

TABLE II.

Comparison of Data on Special Practice

Specialty	Men (plus 2.7% women) (Weiskotten)	Women 100% (Tracy)
Internal Medicine	18.2%	10.1%
Pediatrics	11.1%	7.7%
Gynecology and Obstetrics	7.3%	16.7%
Otolaryngology and Ophthalmology	15.4%	9.3%
Pathology	5.3%	7.9%
Psychiatry	6.5%	5.0%
Public Health	3.4%	6.3%
College Health Service	0 %	6.6%

In regard to the effect of marriage on the medical activity of women the additional data change the figures very little, and the result is shown in the table.

TABLE III.

Marriage and Medical Practice

In the 1905-10 group:
Married—45.9%, of whom 83.4% are in active practice.
Single—54.1%, of whom 93.4% are in active practice.
In the 1912-21 group:
Married—40.8%, of whom 78.5% are in active practice.
Single—59.1%, of whom 96.2% are in active practice.

Conclusions

The only conclusions that can reasonably be drawn from the data available are:

(1) That women physicians when they specialize tend to do so more frequently in the fields of gynecology and obstetrics, in public health and in pathology.

(2) That a higher percentage of women than men cease to practice, but that marriage does not operate to cause cessation of practice as often as has been commonly supposed.

A School of Tuberculosis*

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The rush of new developments, the maelstrom of new ideas has taken our thoughts and our concern away from the bedside. We have, in our rush towards the laboratories, forgotten the living laboratory, the patient. We have dismembered the patient, separated him into his component tissues and taken those tissues to the scientific laboratory for analysis. We are inclined to place the cart before the horse, to rely too much on laboratory opinion, to have over-confidence in what J. B. Murphy was wont to call "instruments of precision." In short, the method of education and instruction in the subject of tuberculosis, as studied in our medical schools, is illogical and incomplete.

Public Health Aspects

The result of this incomplete instruction in tuberculosis is particularly regrettable from the point of view of public health. Available statistics seem to indicate that the training in tuberculosis given, at present, in our medical schools does not equip the physician to meet adequately the problem of tuberculosis as he finds it in his practice.

Pulmonary Cases in Dispensaries

The total number of pulmonary cases diagnosed in the dispensaries of the Municipal Tuberculosis Sanitarium during 1927 was 3,508. At the time of diagnosis of these 3,508 cases, 1,567, or 45 per cent, were minimal or incipient cases, 1,155, or 33 per cent, were moderately advanced cases and 786 or 22 per cent were far advanced cases.

These figures indicate that 55 per cent of patients diagnosed as cases of pulmonary tuberculosis at our dispensaries were already either moderately or far advanced. In Chicago in 1927, including dispensary and private physician patients, 7,798 new cases were reported; in the same period 2,336 cases were reported by our laboratory as being positive on first examination. This large percentage of cases positive on first sputum examination is additional evidence that we are not sufficiently on the alert in the matter of early diagnoses. It is generally considered that when the tubercle bacillus is present in the sputum, in the great majority of cases, the disease is already advanced beyond the minimal or early stage.

Tuberculosis Death Rate

Consideration of the death reports of 1927 is fraught with still more serious import. In Chicago in 1927, 2,567 persons died of tuber-

*An article describing in greater detail the School of Tuberculosis of the Municipal Tuberculosis Sanitarium has recently been published in a Bulletin of the Municipal Tuberculosis Sanitarium, which may be obtained by writing to the Central Office of the Sanitarium, 2049 Washington Boulevard, Chicago.

culosis. In 477 of these 2,567 cases the death report constituted the first report of the case. In these 477 cases the patient had been, to the time of his death, under absolutely no official supervision. In other words, one out of every five who die of tuberculosis in Chicago is allowed, for a period of months or even years, to go unsupervised, to broadcast the seeds of the disease in the community.

There are two definite factors in the early recognition of tuberculosis:

1. Lay Education

Lay education implies the education of the lay individual as to those signs and symptoms which should call his attention to the fact that he is physically below par and suffering from an abnormal condition of the respiratory system, possibly tuberculosis. This form of education is broadcast through the medium of propaganda constantly being carried on by public health organizations such as ours. It constitutes one of the chief divisions of the big campaign that the National Tuberculosis Association is, at the present time, promoting throughout the country.

2. Medical Education

It is useless to educate the layman to suspect tuberculosis unless the medical practitioner is fully qualified to remove or confirm that suspicion. Of the two the medical education is much more important. The medical man is, after all, the best publicity agent in public health matters; he has access to and the confidence of the public and can spread the knowledge of infectious disease better than any other agency. That the practitioner, in many instances, is not fully grounded in the principles of tuberculosis prevention and therapy is not his fault.

An Incomplete Curriculum

The medical curriculum does not contain adequate provision for tuberculosis study.

In discussing any teaching plan on any subject we have to keep in mind three considerations: 1. The Teacher; 2. The Student; 3. Teaching Facilities. It should be the objective, in the first place, to pick out or choose those most competent to teach; in the second place, to provide those competent to teach with the best available facilities; in the third place, to provide those most competent to teach with the best and most appreciative type of student.

The *summum bonum,* or objective most to be desired, is the union or amalgamation of the best possible clinical material with the best teaching talent.

A Union of Teaching Facilities and Teaching Talent

In Chicago we are peculiarly fortunate in that we have a sanitarium of 1,101 bed capacity with every latest feature of modern equipment;

in other words, a wealth of clinical material with all necessary facilities for its study. In addition, we have four Class A medical schools, on the professorial staff of which are men of national and international reputation. It would seem rational to unite the two elements, teaching ability to teaching facility, for the benefit of patients, students and community.

If the medical student is to be taught tuberculosis, he can be taught tuberculosis in no better school than in a great tuberculosis sanitarium; if he is to be taught tuberculosis he should, moreover, have the best teachers.

The Consulting Staff

The first step in our plan was the appointment of the consulting staff which would develop to the utmost, the teaching possibilities of the Municipal Tuberculosis Sanitarium, and furnish the patients advantages which are usually not obtainable in tuberculosis institutions.

In the second place, a staff of nationally and internationally known specialists will form a splendid teaching nucleus to broadcast to the student body the latest developments in any special field of tuberculosis research. In the third place, an affiliation with the sanitarium will provide the specialist with ample material for clinical and laboratory research. This feature must not be underestimated. The difficulty of finding suitable material in sufficient quantity has frequently been a stumbling block in the road of valuable research.

The appointment of our consulting staff, therefore, was the first step in the development of our School of Tuberculosis.

Our next step was to secure the cooperation of the medical schools. To present our proposition to the Class A medical schools, a letter was sent to the deans outlining the teaching plan we had in mind and soliciting their cooperation. The reaction on the part of the majority of the medical schools was quite favorable and a tentative curriculum was decided upon. The courses decided on were as follows:

I. Undergraduate Course of Instruction: A twelve-weeks' intensive course covering all features of undergraduate instruction in tuberculosis.

II. Resident Clerkship: For senior students, to bring them in closer contact with their problem, the patient.

III. Graduate Instruction.

IV. Postgraduate Courses for Practicing Physicians.

V. Special Courses.

A brief discussion of each of these features will be of interest.

I. Undergraduate Course of Instruction

This course is open to junior and senior students. The course calls for a half day each week for twelve weeks. It offers every phase

of tuberculosis work, including clinical, laboratory and public health. The subject is presented to the students as a unit, one feature dovetailing or mortising accurately into another. The course starts with the history of tuberculosis and leads on through etiology, pathology, symptomatology, diagnosis, treatment, complications and public health.

Teaching Facilities and Material

Before proceeding further it may be advisable and useful to consider briefly the quality and character of the teaching facilities available. We may, for the purpose of discussion, divide these facilities into: A, Clinical; B, Laboratory; C, Operative; D, Mechano-therapeutic.

Our Sanitarium, at present, has a capacity of 1,150 beds. These beds are all occupied by patients in all stages of the disease. A special feature is our Children's Tuberculosis Division. Recently, a new million dollar addition to the infirmary was completed and one entire floor of this addition, housing 125 patients, is devoted entirely to the care of children suffering from tuberculosis in its various phases. Special provision has been made in the way of actinic ray therapy, solaria and other measures for the care of these children.

All varieties and types of advanced tuberculosis and its complications may be seen in our infirmary, which has a capacity of 776 beds. Our cottages, which on the male side have a capacity of 194 patients, and on the female side, a capacity of 180 patients, show all varieties of mild tuberculosis.

If one were so inclined, from the material at his disposal, one could show patients, at a single session, representative of every stage of the disease and patients showing complications and disease variations of every type.

The Resident Staff and Its Relation to Teaching

The responsibility of utilizing clinical material for teaching purposes, to the best advantage, devolves largely on the resident medical staff. The members of the consulting staff report at the Sanitarium on certain days, and the resident staff, anticipating their visit, collects from the wards, porches or cottages such patients as demand the attention or supervision of the particular specialist.

From the material referred to them the consulting staff chooses such cases as they deem advisable for the purpose of teaching and demonstration. In this way the whole institution is combed for suitable subjects so that, under average conditions, the medical student should have opportunity to see and study cases which he could not possibly see or study elsewhere.

Three mornings a week the writer makes a clinical survey at the Sanitarium proper. At this clinic all special diagnostic matters of in-

terest are referred by the resident staff for consideration. Discussions are in order as to the indications and contraindications for future treatment, especially as regards surgical treatment. The purpose of this clinic is to unify and coordinate the work of the consulting and resident staffs. Through the medium of this clinic the writer establishes personal contact with patients for whom surgical measures are indicated, the proper psychology is applied, the value and comparative study of the measure indicated and the apprehension of the patient lessened.

Laboratory Facilities

Our entire laboratory unit, including personnel and equipment, is at the disposal of the medical schools for teaching purposes. We have probably the best equipped laboratory devoted entirely to tuberculosis in this country or abroad. In 1927, an appropriation of $61,295.00 was made for the support and maintenance of the laboratory.

The laboratory personnel consists of a medical director of research, an assistant medical director of research, two laboratory consultants, a physiological chemist, a pharmacologist, a research bacteriologist, a research technician, a tuberculosis research operator, a senior sanitary chemist, a research dietitian, a pathological technician, a junior bacteriologist, a laboratory curator, a physiologist, four laboratory technicians, an assistant laboratory technician, two medical student technicians, a morgue attendant, twelve laboratory attendants, a medical librarian, an office secretary and five laborers.

The laboratory has, as an important accessory, a well-stocked and very modern library to which monthly additions of books and periodicals are made and a thoroughly equipped autopsy room. The animal house is abundantly stocked with guinea-pigs, dogs, mice, etc. In addition, there are horses, sheep and goats in sufficient number for experiments of any magnitude.

For teaching purposes, a very complete and exhaustive bacteriologic and pathologic exhibit is maintained and increased from time to time. Hundreds of mounted pathological specimens are available and slides, cultures, plates, etc., showing various phases in the life cycle of the tubercle bacillus, are always on hand.

Autopsies

The percentage of autopsies secured is gradually increasing; in the first three months of 1928, from a total of 60 deaths, 20 autopsies were secured. The great increase in autopsy consents marks the interest in case study manifested by the resident physicians and clerks since the inception of the School of Tuberculosis.

Operative and Roentgen Ray Facilities

A completely equipped and modern operating room is a leading

feature of our new infirmary addition. The students have opportunity to see all types of chest surgery. A complete roentgen ray and fluoroscopic plant, with an attendant technician, is at the disposal of the teaching staff.

The Twelve Weeks' Undergraduate Course

This course consists of a weekly, three-hour course of instruction, spread over a period of twelve weeks. The weekly period is divided, at the judgment of the teacher, between lecture and demonstration work. A lecture in itself is unconvincing. A lecture, followed immediately by a thorough demonstration, is interesting and leaves a permanent impression on the mind of the student. The arrangement of the schedule is as follows:

First Period: History of Pulmonary Tuberculosis; Bacteriology of Tuberculosis.

Second Period: Pathology.

Third Period: Symptomatology of Tuberculosis: 1, Didactic; 2, Small group demonstrations by the resident staff. The students in small groups are shown patients illustrative of the different types of tuberculosis and of the different varieties of onset.

Fourth Period: Diagnosis of Pulmonary Tuberculosis.

Fifth Period: Treatment of Tuberculosis: 1, General; 2, Treatment of special symptoms; 3, Treatment of complications.

Sixth Period: Roentgent Ray Diagnosis, 1 hour; artificial pneumothorax, 1 hour; heliotherapy, ultraviolet, 1 hour.

Seventh Period: Surgical Treatment of Pulmonary Tuberculosis: 1, Didactic; 2, Surgical Clinic.

Eighth Period: Tuberculosis of Childhood: 1, Didactic; 2, Special diagnostic methods; 3, roentgen ray; 4, tuberculin, etc.

Ninth Period: Gastrointestinal tuberculosis, 1½ hrs.; tuberculosis and pregnancy, 1½ hrs.

Tenth Period: Tuberculosis of the ear, nose and throat, 1½ hrs.; lecture and clinic; tuberculosis of the eye, 1½ hrs.; lecture and clinic.

Eleventh Period: Renal or genito-urinary tuberculosis, 1½ hrs.; lecture and clinic; tuberculosis of the skin, 1½ hrs.; lecture and clinic.

Twelfth Period: Public health aspects of tuberculosis.

II. Resident Clerkship

At first sight, the resident clerkship may appear of much less importance and value than the twelve weeks' undergraduate course. For those, however, who are fortunate enough to be able to take it, the course will undoubtedly have a very definite, outstanding influence on their future medical work.

The fifth year is, in my opinion, a bit late. The student should meet and make the acquaintance of the patient at a much earlier date.

He should go from patients to books instead of from books to patients. The resident clerkship in a large sanitarium brings the student in direct contact with sick humanity and causes him to visualize himself in the future as a physician and healer, rather than as a business man or money maker (a conception which, unfortunately, nowadays is only too rare).

Under the present arrangement, three or more senior students from each of the Class A medical schools of Chicago take this course at a time, are housed and boarded at the Sanitarium and given a period of service of one or more weeks. In every instance, one resident clerk is assigned to one resident physician and works in intimate cooperation with this resident physician. The resident clerk is, at all times, under the direct and kindly supervision of his preceptor, the house physician, and works with him alone, except for special work or clinics during which the resident staff and clerks are grouped.

The student clerk is assigned to his room, given a schedule of duties to perform and works in close cooperation with the member of the resident staff to whom he reports. He is instructed in sanitarium routine, the principles of diagnosis and treatment and gets a brief but rather exhaustive survey of the whole domain of institutional treatment for tuberculosis.

At the end of his service, the resident clerk submits to the Director of the School of Tuberculosis, a thesis containing a summary of all the work done, at least one complete case history and a résumé of the impressions gained during the service. It is of interest to note that consideration of these theses as submitted indicates that the course seems to have captured the imagination of the students. In practically every thesis the student expresses enthusiastic commendation of and satisfaction with the teaching program.

Outline of the Duties of the Resident Clerks

MONDAY

9:00 to 12:00

1. Assignment to rooms.
2. Report to medical superintendent for appointment. General inspection of sanitarium. Discussion of the work of each department.
3. General inspection of buildings, grounds, etc.

2:00 to 5:00

1. Instruction in history taking.
2. Charting of findings.
3. National classification.

TUESDAY

9:00 to 12:00

2:00 to 5:00

1. Making rounds in wards or cottages.
2. Examination of new patients.
3. Reexamination of old patients.
4. Observing work of resident physicians.

WEDNESDAY

9:00 to 12:00

Diagnostic clinic.

Instruction as to modes of diagnosis, indications and contraindications as to special therapy.

Instruction in physical examination and diagnosis of chest conditions.

2:00 to 5:00

Routine under resident physician, including artificial pneumothorax.

THURSDAY

8:30 to 10:30

X-ray and pulmonary tuberculosis.

1. Fluoroscopic study.
2. Interpretation of x-ray plates: (a) Normal chests; (b) Annular shadows as compared with cavities; (c) Fluids as compared with consolidation.
3. X-ray therapy.

10:30 to 12:30

1. Gastrointestinal tuberculosis.
2. Examination of cases fluoroscopically.
3. Discussion of special gastroenterological work.

2:00 to 3:00

Demonstrations of pathological specimens of gastrointestinal tract.

3:00 to 5:00

Bone tuberculosis with demonstration of cases.

FRIDAY

8:30 to 10:30

Laryngeal tuberculosis: (a) Method of treatment; (b) Method of examination; (c) Diagnosis; (d) Bronchoscopy.

10:30 to 12:30

Cystoscopic examination: explanation of technic; kidney catheterization; x-ray interpretation.

2:00 to 4:00

Pediatrics: Pulmonary tuberculosis in children; gland tuberculosis in children.

4:00 to 5:00

Laboratory methods.

SATURDAY

8:30 to 10:30

Surgery and pulmonary tuberculosis—

1. Principles of surgical treatment: (a) Phrenicoexeresis; (b) Thoracoplasty; (c) Pneumolysis; (d) Empyema. Surgical clinics and case demonstration.

10:30 to 12:30

Artificial pneumothorax in pulmonary tuberculosis; demonstrations of types of cases suitable for treatment; method of gas inflation; interpretation of findings with x-ray study.

2:00 to 5:00

Laboratory: Postmortems; examination of specimens; guinea-pig inoculations; staining of slides; special methods of laboratory research.

III. Graduate Instruction

One of the needs of our age is practical research. By practical research we mean research conducted under the auspices of an institution which is engaged in practical health enterprise. There is great and

intense need for creating research tendencies in students with the research mind, in individuals inclined toward research work. To meet this much-felt want, in connection with the School of Tuberculosis, two innovations have been created in the establishment of: *A, Research Fellowships; B, Degree Fellowships.*

Research Fellowships. Two Fellowships in this branch have been created, one in surgery and one in medicine. They carry in addition to maintenance, an annual stipend of $1,800.00. The individuals awarded the Fellowships are assigned a definite research program, to the solution of which they must devote the major part of their time while in residence at the Sanitarium. With the facilities available and under the excellent supervision of our laboratory chiefs, the work done by such Fellows should form a definite contribution towards advancement of knowledge in the particular subject in which they work.

Degree Fellowships. According to present regulations, medical students from Class A schools, in addition to the regular four year course, are compelled to spend a fifth year in residence in a hospital as an interne or, as an alternative, to spend it in some branch of approved research work. It occurred to the writer that the institution of two or more Degree Fellowships for fifth year students would be of benefit both to students and to the profession.

Two or more such Fellowships are allotted to fifth year students particularly interested in tuberculosis work. By arrangement with the graduate department of two of the leading universities, these students pursue their work on definite problems under careful supervision. They are given all laboratory and other facilities needed and are kept at work on the special problem allotted to them during the entire period of their Fellowship. At the termination of their Fellowship, they submit a thesis which is acceptable as a thesis for Master or other advanced scholastic or scientific degree.

IV. Postgraduate Course for Practicing Physicians

This schedule includes *1, A Rotating Clinic;* a course of instruction rotating through the different sections of the city, through the agency of the local branches of the Chicago Medical Society. *2, Summer School Courses; 3, A Special Course on the Public Health Aspects of Tuberculosis.*

The Rotating Clinic. The average general practitioner is a busy individual. He has little time at his disposal for clinics in distant parts of the city. He has the desire to learn, to add to his store of information; he is, however, hampered, handicapped; a busy daily routine, manifold and pressing responsibilities keep him harnessed to his job and will not allow him sufficient leisure to attend a distant clinic. Nevertheless, the education of the practicing physician is the first requi-

site in a successful campaign against tuberculosis. The recognition of the early case of tuberculosis is vital and this faculty of early recognition demands some degree of specialistic training. It was felt that the interest and attendance of the physicians might be secured if an adequate teaching program, presented in an unusual way, was taken into the different communities throughout the city. It was decided to work from the local branches of the Chicago Medical Society as a base, carrying the Rotating Clinic from one branch in one section of the city to another branch in another section, as the occasion demands.

The following subjects were taught in two-hour biweekly sessions: Etiology and bacteriology; pathology; symptoms; diagnosis; tuberculosis in childhood; x-ray; pneumothorax; biweekly diagnostic sessions in the dispensaries. The sessions were made as interesting as possible. For instance, in the sessions on bacteriology and pathology, a truck-load of apparatus, of mounted and unmounted specimens, was sent to the lecture hall. The specimens included all phases of bacteriological and pathological work relating to tuberculosis. The lecturer or instructor usually talked for an hour and spent the remainder of the time in an interesting demonstration.

A special word is necessary regarding the diagnostic sessions. We regard this practical work in the dispensary as one of the most important, if not the most important feature of the course. The physicians, under careful supervision, were shown a large number of cases, received instruction in diagnosis and, above all, instruction in the detection of the early case.

For this course two or three of our adjacent dispensaries were used. We chose the dispensaries located in the neighborhoods in which most of the physicians lived. The practitioners were assigned to the clinic nearest their homes which was, in some instances, only a few blocks away. In our first course we distributed the sixty-five physicians taking the course among three dispensaries. Each group was divided into a morning and an afternoon group. These groups of ten were again divided into groups of two or three, each with one of the dispensary physicians, chosen for his skill in teaching, as instructor. According to this system, each physician received practically individual instruction.

The head physicians for several days previously had selected cases of interest, illustrative of all types and all stages of tuberculosis. The case history was discussed, x-ray findings studied in conjunction with the patient under examination and the details of symptoms, diagnosis and treatment intimately and completely covered. A large group of patients was always on hand. The practitioner is more interested in seeing a large group of cases typifying every phase of the disease rather than in spending long periods of time in examining one patient who exemplified as unusual lesion.

Summer School Course

For the benefit of out-of-town physicians and of Chicago physicians who have more time at their disposal, an intensive, postgraduate course will be given at the Sanitarium during the summer months. Each course lasts one month and is planned along the lines already laid down. The teaching faculty for the summer course is made up of members of the consulting staff. The entire personnel, laboratory and clinical facilities of the institution are available for teaching purposes. There will be both morning and afternoon sessions, in fact, an entire school day. The work, however, will be interesting and diversified and the month's course, as planned, will cover every phase of tuberculosis work.

V. Special Course on Public Health Aspects of Tuberculosis

Public health is a much neglected subject in the curriculum of the medical schools. In our own case we have not, up to the present, developed our course of public health instruction in tuberculosis. The short period of time since the establishment of the School of Tuberculosis and the organization of the many other courses did not leave us much opportunity for development of public health instruction. Another reason for the delay in promoting this course is the rather unfortunate fact that there has not been, up to the present time, sufficient demand for it. We hope, however, that in the near future the medical schools and the profession in general will lay more emphasis on the importance of public health work, and that propaganda along these lines will create and develop a demand for the type of course which we intend to offer.

Summary

A School of Tuberculosis, along similar lines, may be planned for any sanitarium which, from the point of view of its location, is in a position to have the cooperation of a first-class medical school.

Cooperation between the medical school and the Sanitarium will confer the greatest possible benefit on both institutions. It will confer a great benefit on the student who has the opportunity to see and study tuberculosis before he is confronted with the problem of tuberculosis in actual practice.

The School of Tuberculosis will confer the greatest possible benefit on the sanitarium patients in that these patients will have the benefit of specialized knowledge and skill for ailments other than tuberculosis.

Cooperation between the medical school and the tuberculosis institution will have a very great influence in stimulating tuberculosis research. The type of equipment in the properly conducted sanitarium, the high standard of work, the laboratory facilities, the special tuber-

culosis library, the many and interesting problems will act as incentives to the students.

The School of Tuberculosis will also be an important factor in raising the efficiency of the resident staff. The resident staff will teach and be taught. They will teach the student clerks and in so doing find interest and stimulation. They will be associated with the members of the consulting staff, be taught by them and make progress in the study of tuberculosis and in the study of medicine in general. They will become more interested in their professional duties and this increased interest and enthusiasm will redound greatly to the benefit of the sanitarium patients.

From every point of view, from the point of view of the public, from the point of view of the sanitarium patient, from the point of view of the resident teacher, from the point of view of the professor, from the point of view of the scientist and research worker, a School of Tuberculosis, along the lines laid down, is a most desirable and much needed innovation. It is hoped that the near future will see the inauguration of many such schools throughout the country.

Results

Judging from our present registration, by the end of the year 160 students will have completed the course of resident clerkship; 180 students will have finished the undergraduate 12 weeks' course of tuberculosis; 110 doctors have, to date, been in attendance at the postgraduate rotating clinic. Two fellowships are now operative; one in the department of medicine, assigned to the subject of childhood tuberculosis; the other is a surgical fellowship. Six resident scholarships, each covering a period of four months, have already been awarded. These scholarships deal with some special problem of tuberculosis, and the work is carried out under the supervision of a member of the research department.

The experiment, to date, bears every indication of continued success. Teaching, in its best fulfillment, depends on the intimate union of teaching faculties and teaching facilities; in other words, the intimate union of the medical school, in which tuberculosis may be taught and the sanitarium, in which tuberculosis may be studied.

How Is "Medical Ethics" to be Taught?

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The Council on Medical Education of the American Medical Association and other influential organizations are urging that medical students receive instruction in "medical ethics." Without going into the implications of this urge, or into the very debatable subject itself, it may be worth a note to consider how this instruction is to be given. In so delicate a field, the method of presentation may be a considerable factor in the desired success of the experiment.

In dealing with this particular matter of opinion, it is wise to realize that the average medical student of today is a keen, thoughtful, and mature individual, sincere at heart, but well versed in the clever sophistries of the times. Usually sympathetic with the "debunking" attempts of H. L. Mencken and the latter's literary kin, such an individual will not easily tolerate the traditional senile drivel on "medical ethics." From such sentimental slop our medical students have long ago been weaned.

As a suggestion designed to hold the respect and attention of medical students in a formal consideration of the general problems of their professional conduct, the following scheme is offered as a rational and instructive effort: (1) An introductory series of three or four lectures on ethics itself, to be delivered by a member of the academic department of philosophy of the University. This might orient the student in the general philosophy of the discipline, and might give him an idea of the chief ethical problems as they relate to medicine. It might also give some of the historic solutions offered by various philosophers to these problems. Professor Edward M. East of Harvard (in his "Mankind at the Cross-Roads") suggested this as the most worth while addition to the current medical curriculum, but it does not seem ever to have been tried.

After this real philosophical introduction, the group might continue with (2) a consideration of the historical development of "medical ethics," either by qualified lecturers, or by suggested readings. As source-books for this phase of the effort, the following works may be found helpful:

FRIEDENWALD, H.: Ethics of the Practice of Medicine from the Jewish Point of View, *Johns Hopkins Hosp. Bull.*, 28: 256 (Aug.) 1917.

GARRISON, F. H.: History of Medicine, 3rd Ed., Philadelphia, 1921.

JONES, W. H. S.: Hippocrates, Vol. I and II, 1923, in the Loeb Classical Library. Also his Greek Medical Etiquette, *Proc. Roy.*

Soc. Med., Sect. Hist. Med., 16: 11 (April) 1923. Also his "The Doctor's Oath," Cambridge, 1924.

LEAKE, C. D.: Percival's Code, A Chapter in the Historical Development of Medical Ethics, *J. Am. M. A.*, 81: 366 (Aug. 4) 1923. Also Percival's Medical Ethics, just issued by the Waverly Press of Baltimore.

SMITHIES, F. C.: Historical Sketch of the Development of Medical Ethics, *Ann. Clin. M.*, 1925.

WILBUR, R. L.: The Honor System in Medical Practice, *J. Am. M. A.*, 89: 569 (Aug. 20) 1927.

Dr. Jones' authoritative studies on Hippocrates, and his interpretation of Greek medical etiquette, are absolutely essential for a proper appreciation of the development of "medical ethics." Percival's "Medical Ethics," the prototype of all modern codified systems, also contains reprints of other significant documents in the development of "medical ethics," and the volume is prefaced by a rather unsatisfactory historical and philosophical introduction. Since I have relinquished my rights to royalties from this work, I may be pardoned both for recommending and criticizing it. Dr. Wilbur's paper is significant in representing a liberal view on current problems.

After this more or less didactic approach to the subject, not to be rendered in too detailed a manner, the scheme of proposed instruction might conclude with (3) informal discussions of actual case reports bearing on questions of "medical ethics," to be directed by older, experienced, and respected practitioners, but in which the students are urged to take an active part. Some such scheme has been advocated by Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, and he has intimated that he is preparing such a series of case histories.

As here outlined, this sudy of "medical ethics" might be completed by devoting to it one hour a week for eight or ten weeks. It might fit very nicely into such courses as may be offered in the history of medicine (as at the University of Wisconsin). It should be, of course, a voluntary offering, and if it is interesting to the students, as it can be, they will flock to it. It dare not be sentimental, nor can it be pedantic.

Without emphasizing the obvious, this suggested "course" might give, in the philosophical and historical introduction, a wholesome outlook on the practical moral problems of medical practice. It could, without moralizing, indicate the mistakes physicians have made in the past in dealing with their patients and the public. The relative nature of such documents as the current *"Principles of Medical Ethics of the American Medical Association"* might become apparent. Further, the significant difference between etiquette and ethics in medical practice might become clear to the student and fu-

ture physician. Introduced by a layman, a valuable point of view for the profession as a whole might be gained. With this sort of introductory material, the free and open discussion of case histories in "medical ethics" could become an inspiring and useful practical training.

The public, as well as the medical profession, is interested in "medical ethics." Naturally, because it pays the bill. Changing conditions in medical practice are making the matter acute. It is becoming apparent that group practice, health insurance, and periodic health examinations, as well as various aspects of public health measures, are profoundly altering the points of view of the physician. When it becomes financially more interesting for him to keep his patients well than to treat them when they are sick, the fundamental idealism of the medical profession will have a better chance to express itself, for the hedonistic consequences of the present financial system of ordinary medical practice would not be so likely to follow.

SUMMARY

It is suggested that instruction in "medical ethics" may be carried on advantageously by (1) a short introductory series of lectures on general ethics by a qualified member of the philosophy department of the University; (2) lectures or readings on the historical development of "medical ethics," and (3) concluding with free discussions, in which the students take part, on practical case histories involving different aspects of etiquette and ethics in medical practice.

THE COMMITTEE ON THE COST OF MEDICAL CARE

910 Seventeenth Street, Washington, D. C.
Telephone Main 6725

June 20, 1928.

Dr. Fred C. Zapffe,
Chicago, Illinois.

My dear Doctor Zapffe:

We have received a letter from one of the large state medical associations suggesting that we send to the editor of its journal information regarding the plans of The Committee on the Cost of Medical Care. This association has sent a special notice to members of its constituent county societies asking them to cooperate with us. A considerable number of private practitioners have written to us commenting upon our work—95 per cent or more of them favorably. The American Medical Association has received a number of inquiries regarding our origin, plans and aims.

Because of the wide-spread interest in the committee's work, it has occurred to me that you might wish to comment upon it in your columns. I am, therefore, sending you inclosed a copy of the committee's program and a brief circular. In addition, the following facts may be of special interest to you:

The committee was organized in May, 1927, at a conference called by 10 physicians (3 of whom are in private practice), 3 economists and 3 non-medical persons engaged in public health work, and attended by approximately 60 persons representing these three fields and the general public.

While the committee was small at first, it is now composed of 42 persons —14 private practitioners of medicine, 6 men engaged in public health work 8 persons employed by various medical institutions and organizations, 5 economists, and 9 persons prominently associated with public welfare enterprises. In the entire committee there are 23 persons with the degree of Doctor of Medicine—such a large proportion that the committee has been charged with being a medical agency disguised by the addition of a few outsiders, which has been organized to "put something over on the public."

The study is not an investigation of the charges made by the 140,000 physicians engaged in private practice. It is a study of all kinds of medical care as rendered by 1,000,000 persons employed in various capacities on a whole-time basis, in office or home, or (in an increasing proportion of cases) in medical institutions now capitalized at approximately $5,000,000,000.

The committee will deal not only with the cost to the people of hospital care, nursing, dentistry, drugs, physiotherapy, surgery, and other medical services, but with various problems involved in the prevention and cure of disease. The demand for medical services and their supply and distribution is the subject of a preliminary survey. The major group of studies deals not only with the cost to the family, but also with the return accruing to the physician, the nurse, the dentist and other agents furnishing such services. A third group of studies consists of an analysis of industrial medical services and other organized facilities now serving particular groups of the population.

The American Medical Association is to conduct a study on the income of physicians. The United States Public Health Service and the Metropolitan Life Insurance Company have already begun other studies. It is hoped that the American Dental Association will also participate.

My association with the members of the committee has convinced me that the general committee, the executive committee and the research staff are approaching the difficult task before them without preconceived ideas of what the solutions of the problem will be. Their single purpose is fact finding.

I believe we have proceeded along right lines. It is well, I am convinced, that the committee is responsible to no previously established organization, but only to the general public; for the prevention and cure of disease is a matter in which the public interest is paramount.

In 1922, the Journal of the Michigan State Medical Society discussed the dissatisfaction of the public with the existing situation in medicine. It stated:

> "The tendency of the day is that when any group of citizens cannot afford to purchase certain privileges, services or needed comforts, the demand goes forth that the state supply to them that which they cannot now obtain. The state and county usually comply with the pressing demand of its citizens. We are fearful that we are on the eve of such a demand from the people. What are you going to do about it?"

The same year the President of the Ohio State Medical Association made a similar statement and asked a similar question.

During the past decade or two, there have been other warnings and questions, like these, but no effort has been made by medical organizations to meet the problem. It was not reasonable to expect them to do so. Private practitioners are absorbed in the technique of treatment. It is extremely difficult for them to see the problem as a whole. The points of view of public health and economics, combined with the point of view of private practice, are needed. These are all found in the Committee on the Cost of Medical Care.

The interests of the private practitioner will be adequately represented and safeguarded as the work of the committee develops. The 14 distinguished practitioners on the committee, several of them prominently connected with the American Medical Association and its constituent organizations, are actively participating in the deliberations of the committee.

Sincerely yours,

RAY LYMAN WILBUR, Chairman.

Program of Thirty-ninth Annual Meeting

Following is a tentative list of the papers to be read at the meeting. The Executive Council has ruled that not more than twenty minutes be allotted to the reading of a paper. This action was taken to permit of more discussion which, after all, is often of equal interest as the paper itself. Although the number of papers scheduled seems to be rather large, this ruling of the Council gives ample time for carrying out this program, and, furthermore, many of the authors have announced that they would not need more than ten or fifteen minutes to present their subject. It goes without saying, that all papers will be published in full in the BULLETIN, together with the discussion.

This program is an extremely interesting one—to the administrator as well as to the teacher. It gives information and opportunity for discussion. The topics are all new and timely.

Premedical Education from the Standpoint of the College.—Waldo Shumway, University of Illinois.

Arts—Medical Courses.—J. W. Pryor, University of Kentucky.

Methods of Selection of Medical Students.—A. S. Begg, Chairman Committee on Medical Education and Pedagogics.

Methods of Correlation Between Laboratory and Clinical Teaching.—A. D. Hirschfelder, University of Minnesota.

Experiments in Correlating Clinical, Laboratory and Didactic Instruction.—H. R. Wahl, University of Kansas.

The Training of the Specialist with Particular Reference to Surgery.—Alexander Primrose, University of Toronto.

The Teaching of Psychiatry in Medical Schools.—A. W. Stearns, Tufts College Medical School.

The Teaching of Pharmacology.—M. L. Bonar, West Virginia University.

The Teaching of Physiology.—Martin L. Fischer, University of Cincinnati.

The Teaching of Elementary Pathology.—Richard S. Austin, University of Cincinnati.

Address of President: Walter L. Niles, Cornell University.

Standardization and Freedom for Experiment.—W. L. Bryan, President Indiana University.

Director of the Teaching Hospital: Dean or Superintendent.—A. C. Bachmeyer, University of Cincinnati.

Impressiveness in Medical Teaching.—Louis B. Wilson, University of Minnesota.

The Weakest Link—J. J. Mullowney, Meharry Medical College.

The Tennessee Quarter Plan.—O. W. Hyman, University of Tennessee.

Four Years of Cooperative Teaching in Medicine.—P. T. Magan, College of Medical Evangelists.

Third Report on Applicants for Admission to Medical Schools.—B. D. Myers, Indiana University.

Title not Announced.—B. C. H. Harvey, University of Chicago.

The Correlation of Grades in Medical and Premedical Work with Personality.—Frederick T. van Beuren, Jr., Columbia University.

Title not Announced.—William Darrach, Columbia University.

Clinical Clerk Demonstration.—Charles P. Emerson, Indiana University.

For further particulars regarding the meeting, see leading Editorial on page 347.

BULLETIN
OF THE
Association of American Medical Colleges

Volume 3 OCTOBER, 1928 Number 4

DR. FRED C. ZAPFFE, Editor, 25 East Washington Street, Chicago

Thirty-ninth Annual Meeting October 29-31

The thirty-ninth annual meeting of the Association will be held in Indianapolis, Indiana, Monday, Tuesday and Wednesday, October 29, 30 and 31. The Hotel Claypool will be the headquarters. The Monday evening banquet and the dinner and executive session on Tuesday evening will be held in the hotel. The daily sessions will be held elsewhere. The Monday and Wednesday sessions will be held in the parlor of the Ball Home for Nurses on the Indianapolis campus. The Tuesday session will be held in Bloomington, the seat of Indiana University, in the Red Room of the gymnasium. Bloomington is about 52 miles from Indianapolis. Arrangements have been made with a motor bus company to run special cars (at a very nominal cost) from Indianapolis to Bloomington early Tuesday morning, returning in time for the dinner and executive session in the evening. That will give opportunity to visit that part of the medical school which is located on the main campus and where anatomy and physiology are taught, and to visit other departments of the university. The beauty of the Indiana countryside is well known. Bloomington is situated in one of the most scenic of these. Hence, this bus ride will give pleasure as well as fresh air and (we hope) sunshine. October is a wonderful month for beautiful scenery in Indiana, almost comparable to that of Canada.

Arrangements have been made with the railroad companies to send representatives to the meeting to arrange for the return home of all the delegates and visitors. These agents will be at the hotel on the afternoon of each of the three days of the meeting.

Arrangements have also been made to transport the delegates from the hotel to the meeting place on Monday and Wednesday mornings, and return. The local faculty members have volunteered the use of their cars for that purpose.

Luncheon will be served at the Riley Hospital on Monday and Wednesday and in Bloomington on Tuesday.

All trains on all roads arrive at the Union Station in Indianapolis, three blocks from the Hotel Claypool. Those who will attend the meeting are urged to make hotel reservations as soon as possible.

The program is published elsewhere in this issue. (Page 346).

Medical Education in the United States

The annual Education Number of *The Journal of the American Medical Association*, Aug. 18, 1928, is replete with data bearing on various phases of medical education and on medical colleges. It is impossible to reprint them all, but a few excerpts are made which are, to say the least, extremely interesting and informative. The total number of medical students in the United States for the year ending June 30, 1928, excluding premedical, special and postgraduate students, was 20,545, an increase of 883 over last year. This is the largest enrolment of students since 1910, eighteen years ago. The total number of graduates for the year ending June 30, 1928, was 4,262, or 227 more than last year. Of the 4,262 medical graduates 2,708, or 222 more than last year, had also obtained degrees in arts and sciences. This year 63.6 per cent of all graduates held collegiate degrees, as compared with only 15.3 per cent of the graduates in 1910. All graduates of five medical schools

held baccalaureate degrees. During the last year 929 women were studying medicine, or thirty-five less than the year before. Altogether, 530 negro students were enrolled, of whom 123 graduated.

New York is the state having the largest number of students enrolled in its medical schools, 2,462 followed by Illinois with 2,127, Pennsylvania with 1,969, and Massachusetts with 1,414. New York leads also in the number of graduates, having reported 535, followed by Illinois with 468, Pennsylvania with 459, Massachusetts with 306, Ohio with 236 and Missouri with 181. Although possession of a degree is required by only a few medical schools, nevertheless, as shown in table 6, 2,708, or 63.6 per cent of all graduates of 1928, obtained baccalaureate degrees in addition to the medical degrees, most of them voluntarily.

During the nineteen years, of the 83,472 individual students enrolled, 14,300 did not go on to graduation, while 69,172, or 82.9 per cent, graduated. Of the students who did not graduate, 68.1 per cent dropped out in the first year, and 21.6, 8.0 and 2.3 per cent, respectively, dropped out in the second, third and fourth years.

Resolution on Medical Education

At the meeting of the American Medical Association held in June, 1928, Dr. Southgate Leigh, Virginia, presented the following resolution to the House of Delegates:

WHEREAS, It would appear most desirable that medical students be permitted to graduate and enter practice at an earlier age than at present, and

WHEREAS, Duke University has apparently decided to make its medical course cover three years of four quarters each, and to change the usual premedical requirements, and

WHEREAS, It would seem that the usual medical course includes more than necessary of the specialties and pays less attention to the fundamentals, and

WHEREAS, It would seem that the course is being made so difficult that the average student is unable to graduate, therefore be it

Resolved, That the Reference Committee on Medical Education be requested to give the subject of medical education full consideration, including preliminary education, premedical course, medical course and hospital training, and report its recommendations to this House.—(*J. A. M. A.*, June 23, 1928, p. 2025.)

The Reference Committee reported on this resolution as follows:

The committee approves the suggestion of the Council that for convenience the inspection and appraisal of x-ray laboratories can best be done in connection with the inspection of clinical laboratories.

It is impossible within the limits of this meeting to give adequate consideration to the many very important topics of medical education brought up by the resolution presented by Dr. Southgate Leigh, but the committee endorses the substance of his resolution to the following effects:

1. That it would be most desirable that medical students should graduate and enter practice at an earlier age than at present.

2. That the plan of covering the medical course in three years of four quarters each instead of in four years of three quarters, with an interval of long vacation which is illustrated by the plan proposed at Duke University, and any other adequate plan of reducing the length of the medical course is greatly to be desired.

3. That the medical course is overcrowded with details and with detailed consideration of the specialties and would be improved by a less crowded course confined more nearly to the essentials and to the fundamentals, and that efforts to this end should be made.—(*J. A. M. A.*, June 23, 1928, p. 2028.)

Teaching of Pediatrics

The Section on Diseases of Children of the American Medical Association appointed a committee to prepare a report on the teaching of pediatrics to undergraduate medical students. At the Minneapolis meeting (June, 1927) this committee reported as follows:

In the absence of definite instructions, the Committee on Pediatric Teaching has construed its functions as being limited to the study of the problems arising from the teaching of pediatrics to the undergraduate medical students. In furthering this objective the committee submits the following recommendations for approval by the Section on Diseases of Children:

1. Pediatrics should be considered a major branch in medical schools, and not a subdivision of the department of medicine.

2. A sufficient budget should be provided by the school to maintain this department at its full efficiency.

3. The teaching of pediatrics should be begun before the senior year.

4. The course of instruction should include both didactic teaching and practical work, the larger percentage of hours being devoted to the clinical aspects of the subject. The latter phases of the course should, whenever possible, be given to small groups of students.

5. Especial emphasis should be given to the study of the nutrition, growth and development of the normal child.

6. Instruction in the methods of prevention of the illness peculiar to childhood (such as the nutritional disorders and respiratory and infectious diseases) belong properly to the course in pediatrics.

7. Instruction to the undergraduate student should concern itself more with the common disorders of childhood than with the rare and unusual conditions.

8. Family contacts between student and patient should be encouraged by means of work in the outpatient department, the infant welfare station and the home.

T. C. HEMFELMANN, Chairman.
J. VICTOR GREENEBAUM.
PAUL W. EMERSON.
E. C. MITCHELL.

Teaching of Obstetrics

At the A. M. A. meeting Dr. J. O. Polak presented the following resolution on the teaching of obstetrics:

WHEREAS, Obstetrics is a major subject and makes up the greater part of the work of the general practitioner, and

WHEREAS, The maternal mortality in the United States is admittedly higher than that of other civilized countries except Chile, and

WHEREAS, The graduate who goes into surgery equips himself by special training, while every medical graduate who goes into general practice must practice obstetrics and may at any time be called on to meet any type of obstetric emergency, and

WHEREAS, The Committee on Curriculum of the American Medical Association and the American Association of Medical Colleges has recommended cutting down the hours allotted to the teaching of obstetrics, be it

Resolved, That the members of the House of Delegates of the American Medical Association most emphatically disapprove of any reduction of the hours allotted to the teaching of obstetrics, and advocate that obstetrics, as a major subject, be allotted a number of hours equal to those allotted to surgery, and be it further

Resolved, That a copy of this resolution be sent to the secretary of the Committee on Medical Education of the American Medical Association and to the secretary of the American Association of Medical Colleges.

The Reference Committee reported on this resolution as follows:

The committee would make the point that the importance of a subject or the amount of work that it constitutes for the general practitioner alone is not a proper measure of the time which should be allotted to the study of that subject: that the proper measurement is the amount of time necessary for the adequate presentation of the subject. For example, the treatment of the minor diseases of the respiratory tract constitutes one of the largest divisions of general practice, as investigation shows; basing the allotment of teaching on that fact alone would require that as much time should be devoted to the teaching of the respiratory diseases as to all of surgery or to nearly all of the rest of the diseases that are included under the practice of medicine.

The committee also feels that definite instructions of this sort to councils and other bodies engaged in the working out of difficult problems are inadvisable; that freedom and initiative should not be hampered by rigid instructions, particularly by instructions originating in bodies that have special interest and may, therefore, not be able to see their own subject in proper prospective or in proper proportions.

The committee would not indicate by anything that is said in this report that it minimizes the importance of thorough instruction in obstetrics. It is sure that every organization now considering the subject or that gives it any thought realizes the importance of its thorough presentation.

The committee recommends that the resolution be not adopted.

The recommendation of the committee was put in the form of a motion and the motion was carried.—(*J. A. M. A.*, June 23, 1928, p. 2035.)

Need for More General Medicine and Less Specialism

There must be more attention paid to general medicine and less to the specialties in the ordinary medical course. Men should be graduated from our medical colleges prepared to practice general medicine and not expected or even permitted to practice a specialty as a specialty until proven qualified. Likewise our boards of Medical Registration and Examination should stop giving rigid examinations in the specialties and require more of the students concerning general medicine and its application. A well-trained general practitioner is good material for a good specialist, and we ought to make it a rule that no man can become a specialist until he first has been a good general physician. Finally, there should be some method whereby we can make it necessary for those who desire to practice a specialty to become properly educated and adequately trained for the work selected. We even would go a step farther and say that specialists should be licensed as specialists after passing an examination that tests qualifications. Certainly some premium should be paid on education, training and experience, and the public has a right to know who is qualified and who is not qualified so that ample protection is afforded. —Editorial, *J. Indiana M. A.*, 21:340 (Aug.) 1928.

College News

University of Iowa College of Medicine

The fifty-ninth session will see all the departments, excepting chemistry, transferred to the new west side campus. The transfer of the Medical Campus to the bluffs overlooking the Iowa river, and about a mile west of the old campus began in 1919. The first unit occupied was the Children's Hospital, completed in 1919, and since that time has housed the departments of orthopedic surgery and of pediatrics. With additions in 1925 it now furnishes accommodations for 230 patients. Late in 1919, the Psychopathic Hospital was added, a little to the west of the Children's Hospital. It has a capacity of 60 patients. In 1920, West Lawn, the new home for the nurses was added. With additions in 1927 this building provides living quarters for over 400 nurses.

Steps toward the completion of the west side medical campus were made possible through an appropriation by the Fortieth General Assembly of the State of Iowa, supplemented by the gift of an equal sum from the General Education Board and the Rockefeller Foundation. Through these agencies $4,500,000 became available in 1924. The plan called for four new units. This sum made possible the two major units. The Medical Laboratories building occupied in 1927 and housing all the preclinical departments, excepting chemistry, is located across the street and about 300 feet south of the Children's Hospital. This building also accommodates the medical library and the administration offices of the College of Medicine. The second major unit, the new General Hospital, will be occupied in September. The building is 500 by 300 feet and located about 200 feet west of the Laboratories building. It will accommodate 750 patients.

Ceremonies dedicating the new General Hospital will be held November 15, 16 and 17. Clinics and addresses by distinguished guests, prominent in the various fields of medicine, will form part of the program on each of the three days. One section of the program is to be given exclusively to the alumni of the Medical College.

New appointments: Andrew H. Woods, professor of psychiatry and director of the psychopathic hospital; Robert E. Neff, hospital administrator; C. W. Rutherford, associate professor and acting head of ophthalmology; Lee Foshay, assistant professor of theory and practice and director of student health; C. S. Jordan, assistant professor of hygiene and epidemiology; P. M. Moore, instructor in otolaryngology.

Promotions: D. M. Lierle, from assistant professor to professor and acting head of otolaryngology; J. D. Boyd, from associate to assistant professor of pediatrics; R. L. Irwin, from demonstrator to assistant professor of anatomy; A. Kolodny, from instructor to assistant professor of surgery; G. H. Miller, from lecturer to assistant professor, theory and practice of medicine.

Washington University

Washington University is approaching consummation of an effort to expand to $4,000,000 the $1,200,000 gift of the late Mrs. William McMillan and to make St. Louis a world center in ophthalmology and otolaryngology. Only a small proportion of the total remains unsubscribed. Construction is to proceed at once on the nine-story McMillan Hospital, to stand just east of the new St. Louis Maternity Hospital. It will include the first specialized otolaryngologic institute in the world, and will be the first hospital of the Washington University group which is not a closed hospital. It will be open to any reputable specialist.

The General Education Board has offered $1,500,000, provided an additional $1,000,000 is raised elsewhere. Nearly $250,000, has been contributed in St. Louis in recent months, warranting im-

mediate completion of the hospital. As directors of the important work to be begun at the new hospital the university has Dr. Harvey J. Howard, formerly of Union Medical College at Peking, as professor of ophthalmology, and Dr. Lee Wallace Dean, former dean of the Medical School of Iowa University, as professor of otolaryngology. The tentative research program has as immediate problems cataract and glaucoma and trachoma. It is planned also to establish a division for examination of airplane pilots. It is proposed to investigate both the eye and inner ear for more exact data in devising more perfect tests.

New York University

The university received recently the sum of $55,491.03 from the Hermann M. Biggs Memorial Fund for the establishment of a professorship in preventive medicine in the New York University and Bellevue Hospital Medical College; $5,000 for the Lucius N. Littauer Pneumonia Fund; $2,500 from the International Committee for the Study of Infantile Paralysis for the establishment of a fund for poliomyelitis research; $2,000 from Mrs. Helen Hartley Jenkins for experiments relating to the use of digitalis under the direction of Prof. John H. Wyckoff, to be used by the Department of Medicine, Third Division, Marcellus Hartley Chair of Medicine; $1,786 for the Cardiac Clinic, from various donors; $1,000 from Mr. and Mrs. Alexander Sinsheimer for the Sinsheimer Oxygen Research Fund; and several additional smaller donations for medical research.

The Hermann M. Biggs Memorial Fund has given more than $55,000 to establish a Biggs professorship in preventive medicine in the university and Bellevue Hospital Medical College.

University of Georgia Medical Department

The 1928 commencement marked the centennial of the founding of the school and the graduation of its ninety-eighth class, no classes having been graduated for two years during the Civil War. The alumni association of the medical school, which met during the celebration, voted to conduct a campaign for $300,000 to erect an alumni memorial building.

Albany Medical College

The college is endeavoring to raise an endowment of $2,000,000, primarily for the purpose of training physicians for the rural communities of New York State, of enabling practicing physicians better to obtain graduate work and of placing the college on a secure financial basis. The college has a five-point program to meet the needs of the rural districts: (1) to give preference in the selection of medical students to those whose affiliations are in its district; (2) to train students primarily for general practice and properly fit them at moderate cost; (3) to provide its graduates and other hospital interns with information concerning locations where physicians are needed and other opportunities; (4) to cooperate with graduates and other physicians in the large district served by the college, giving them an opportunity to take graduate work, review and advanced courses and special work in all departments in the school, and (5) to inform rural communities by suitable publicity of the advantages of employing the local physician.

To advance the campaign for funds, an illustrated booklet, "On the Firing Line of Medicine," is being distributed. It is stated that the number of country physicians in New York State between 1916 and 1921 fell off 20.6 per cent, and by 1921 more than eighty communities appealed to the state department of health to help them obtain a physician. A survey in 1923 revealed that the average age of 50 per cent of the nonurban physicians in Albany, Greene, Schoharie and Rensselaer counties was more than 60 years. The great proportion of the 1,300 living alumni of Albany Medical College are practicing in 233 small towns and rural communities and in only fifty large towns and cities, and of the 1,329 physicians serving in the Albany district from the lower Hudson Valley to the

Canadian border, 51 per cent are graduates of Albany Medical College.

The funds sought are to be used as follows: $400,000 to endow a department of regional extension of medical education; $500,000 for the endowment of graduate work by enlarging the present departments, and $1,100,000 to support present work which is now financed by annual gifts. The state commissioner of health has endorsed the Albany project as essential to the maintenance and betterment of health conditions in northeastern New York. Albany Medical College was founded nearly a hundred years ago. Its equipment is ample for the study of modern medical problems. It has a new six story building joined to the 600 bed Albany Hospital, which also has been remodeled and enlarged. Teaching is carried on in cooperation with the Anthony N. Brady Maternity Hospital, the Child's Hospital, St. Margaret's House and Hospital for Infants, the Samaritan Hospital of Troy, the Albany Guild for Public Health Nursing, the Industrial Emergency Hospital of the General Electric Company and the Ellis Hospital, Schenectady, where that company sends its serious emergency cases.—(*J. A. M. A.*, June 23, 1928, p. 2041.)

Columbia University

F. W. Vanderbilt has contributed $350,000 and Harold S. Vanderbilt $150,000 to enable the university to install the Vanderbilt Clinic in the new medical center.

Dr. Dudley J. Morton, assistant professor of surgery at Yale University, has been appointed associate professor of anatomy. Dr. W. M. Copenhaver, instructor in anatomy in the University of Rochester, has been appointed assistant professor of anatomy. Dr. Clay R. Murray has been promoted to assistant professor of surgery; Dr. Joseph F. McCarthy has resigned as associate professor of urology.

St. Louis University School of Medicine

The new Administrative Board consists of the dean, the Reverend Alphonse M. Schwitalla, S. J.; the associate dean, Dr. Don M. Joseph; Dr. John Auer, professor of pharmacology; William T. Coughlin, professor of surgery; Dr. Ralph A. Kinsella, professor of medicine, and Dr. James P. Harper, dean of the Dental School.

Plans for the new University Hospital have been accepted, and the building of the first unit, which will house the outpatient department, will be begun soon. The hospital will be built on university property across the street from the medical school. A very considerable part of the clinical teaching will be done in this hospital which is essentially a teaching hospital.

Postgraduate Medical Education in Tennessee

The Committee on Medical Education of the Tennessee State Medical Association recommended that the two medical schools in Tennessee inaugurate "rub-up" courses for practitioners and specialists of from six weeks to three months duration to be given during the winter and summer months.

College of Medical Evangelists

Dr. Percy T. Morgan, Los Angeles, has been appointed president, Dr. Newton Evans dean at Los Angeles, and Dr. Edward H. Risley dean at Loma Linda.

Johns Hopkins University School of Medicine

An anonymous gift of $500,000 for the Welch Medical Library has been announced, enabling the university to meet certain conditions laid down last year when the General Education Board gave the library fund $750,000 for the construction of the building and pledged $250,000 for its endowment. An anonymous gift of $20,000 was also announced, for the support of work in psychiatry under the direction of Dr. Adolf Meyer, and $100,000 was given by an anonymous donor to be used for the Wilmer Eye Clinic. Among gifts announced for fel-

lowships and research assistants were $3,800 from the Commonwealth Fund for two years in pediatrics; $15,000 from the Commonwealth Fund for three years in psychiatry; $3,000 from the General Education Board for laryngology, and $1,000 from the Rockefeller Institute, New York, for neurology. It is also stated that gifts amounting to $30,000 a year had been received for research in otology.

Vanderbilt University Medical Department

Dr. C. Sidney Burwell has been made professor of medicine and physician-in-chief of the hospital; Dr. Hugh J. Morgan has been appointed to a professorship of clinical medicine; Dr. Horton R. Casparis has been made professor and head of the department of pediatrics; Dr. John B. Youmans has been appointed to associate professor of medicine; Dr. Tinsley R. Harrison, to assistant professor of medicine; Dr. Beverly Douglas, to associate professor of surgery; Dr. Robert E. Sullivan, to assistant professor of ophthalmology and otolaryngology; Dr. Christopher C. McClure, to assistant professor of surgery in charge of radiology, and Dr. William Litterer, to assistant professor in preventive medicine.

University of California Medical School

New appointments at George Williams Hooper Foundation for Medical Research: Dr. J. C. Geiger, A. B., M. A., M. D., Dr. P. H., associate professor of epidemiology; Dr. Alfred C. Reed, B. A., M. D., professor of tropical medicine; Dr. Edward Matzger, M. D., research associate in medicine.

Baylor University College of Medicine

Dr. Rodger J. B. Hibbard, acting professor of pathology for the session 1927-28, has resigned to engage in the practice of clinical medicine. Dr. Ozro T. Woods, associate professor of pathology, has resigned to become associated with the Dallas Medical and Surgical Clinic. Dr. John C. Haley, assistant professor of bacteriology, has been transferred to the department of anatomy as associate professor. Dr. Maurice L. Richardson, formerly of the department of pathology of Western Reserve University has accepted appointment as professor of pathology and chairman of the department. Dr. Thomas P. Haslam, pathologist and radiologist Davis Memorial Hospital, Elkins, W. Va., and former associate professor of pathology, Medical College of Virginia, has accepted appointment as associate professor of pathology. Dr. Durwood L. Dodd, associate professor of anatomy, has resigned to engage in the practice of clinical medicine. Dr. Carlos I. Reed, associate professor of physiology, has resigned to accept appointment in the University of Illinois.

Yale Medical School

Appointments: John R. Paul, assistant professor of medicine; George Valley, Ph. D., instructor in general bacteriology; George A. Hunt, Ph. D., instructor in bacteriology and immunology; Douglas H. Sprunt, instructor and resident in pathology; Harry M. Zimmerman, instructor and assistant resident in pathology; Henry W. Ferris, instructor in pathology; Marvin M. Scarbrough, lecturer in pathology; Joseph L. Hetzel, instructor and resident in pediatrics; Theodore H. Rider, Ph. D., instructor in pharmacology and toxicology; William E. Callison, instructor in pharmacology and toxicology; Allen D. Keller, instructor in physiology; Everett S. Rademacher, clinical instructor in psychiatry; Frederick W. Roberts, instructor and resident in surgery; Dennis F. O'Connor, instructor in orthopedics; Vincent D. Vermooten, instructor in urology.

The Raleigh Fitkin Memorial Fund has been established by Mr. A. E. Fitkin, New York City, with an endowment of $1,000,000, in memory of his son. A building is to be erected, to cost $500,000, and dedicated to the care of children, both from the standpoint of curative and preventive medicine, the study of children's diseases and the training of men for the achievement of these pur-

poses. The remainder of the fund will be used as a permanent endowment fund and will be administered by Yale University to further the objective of Mr. Fitkin's gift.

Wake Forest College

The family of the late Dr. William A. Johnson, formerly professor of anatomy of Wake Forest College, have established a trust fund which when completed, will be used to construct a medical building in memory of Dr. Johnson. The amount and other details of the fund has not been divulged.

Harvard Medical School

Promotions and appointments: Joseph C. Aub, associate professor of medicine; William L. Aycock and Chester M. Jones, assistant professors of preventive medicine and hygiene; Monroe A. McIver, John Homans, Richard H. Miller and Robert C. Cochrane, assistant professors of surgery; Merrill C. Sosman, assistant professor of roentgenology; Clifford L. Derick and Herrmann L. Blumgart, assistant professors of medicine; Harold Coe Stuart, assistant professor of child hygiene.

Harvard University shares with the University of Rochester a bequest of $640,988 from the estate of Dr. Charles A. Dewey.

Washington University Medical School

Promotions: Malvern B. Clopton to professor of clinical surgery; Glover H. Copher to associate professor of surgery; Ethel Ronzoni, Ph. D., to assistant professor of biologic chemistry; William H. Mook and Richard S. Weiss to assistant professors of clinical dermatology; William J. Dieckmann to assistant professor of obstetrics; Arthur S. Gilson, Jr., Ph. D., to assistant professor of physiology; Warren H. Cole to assistant professor of surgery; Joseph W. Larimore to assistant professor of clinical medicine; Thomas Kenneth Brown to instructor in obstetrics; Bernard J. McMahon to instructor in clinical otolaryngology and Helen T. Graham, Ph. D. (Mrs. Evarts A. Graham) to instructor in pharmacology.

Syracuse University College of Medicine

New appointments: Tracy L. Bryant, instructor, department of anatomy; Robert B. Hartsfield, instructor, department of pathology; Lee A. Hadley, instructor in physical therapy at the dispensary, department of medicine; William J. Gabel, instructor in anesthesia at University Hospital, department of surgery; Leo E. Gibson, instructor in urology at University Hospital, department of surgery; Harry L. Gilmore, Leonard M. Aguilino, Paul H. Lowry and Isaac N. Wolfson, instructors at the dispensary, department of surgery; Francis W. Rosenberger, Warren E. Saile and Michael J. Elwood, instructors at the dispensary, department of pediatrics; Franklin R. Webster, instructor at the dispensary, department of ophthalmology; Armand D. Aguilino, instructor at the dispensary, department of dermatology.

University of Kansas

The Kansas Medical Society at its annual meeting, May 10, voted to advise the medical school of the state university to limit its activities to the legitimate purposes for which it was founded. The school was located at Kansas City chiefly because of the clinical material available for teaching purposes of which it is said to have sufficient to assure the healthy growth of the school. But members of the faculty have gone over the state organizing clinics in competition with practicing physicians, who stood by the institution in the past. The society believes that this course is unnecessary and harmful in that it pauperizes citizens and teaches them that the medical profession owes medical service "for every cause that may be launched whatsoever."

Indiana University School of Medicine

Dr. Albert E. Bulson, Jr., has been made head of the department of ophthal-

mology; Dr. Henry O. Mertz has been made associate. Additions to the faculty: William H. Kennedy, associate in medicine (radium therapy); Gerald W. Gustafson, assistant in obstetrics; Edwin Lee Libbert, assistant in medicine; Walter Phillips Morton, assistant in genito-urinary surgery; John Moore Taylor and Walter Benton Tinsley, assistants in dermatology and syphilology; George W. Wood, assistant in gynecology; Joseph Jerome Littell, Bert Edward Ellis, Guy Worthington and Henry Wilburt Irwin, assistants in rhinology, otology and laryngology.

University of North Dakota School of Medicine

Faculty appointments: Charles B. McGlumphy, professor of pathology and bacteriology; Arthur K. Saiki, instructor in physiology and pharmacology; Jerome T. Syvertson, instructor in pathology, bacteriology and gross anatomy.

University of Oregon Medical School

The Board of Regents of the university has appropriated $50,000 annually for the maintenance of the new dispensary to be built on the campus through a proposed gift of $400,000 from the General Education Board.

Temple University School of Medicine

The curriculum has been reduced by about 1,000 hours of didactic instruction in order to give more time for practical clinical instruction. The full course will call for 4,000 hours of instruction.

University of Toronto Faculty of Medicine

The board of governors of the University of Toronto has decided to grant the degree of doctor of medicine to students who graduate from the medical school instead of the degree of bachelor of medicine. This amendment to the regulations of the university has been made retroactive so that a graduate in medicine who now holds the degree of bachelor of medicine is entitled on application to be admitted without examination to the degree of doctor of medicine on the payment of a fee of $10. Graduates who have been admitted to the degree of doctor of medicine for postgraduate work are authorized to add the designation "cum laude."

Northwestern University Medical School

The hospitals to be erected by Northwestern University Medical School on the McKinlock Campus, East Chicago Avenue near the lake, includes the 200 bed Passavant Hospital, which is under construction at Superior Street and Fairbanks Court; a 300 bed general hospital south of the medical school building and facing the Passavant Hospital; a 125 bed children's memorial hospital directly east of the Passavant Hospital, and a 200 bed maternity hospital on Superior Street east of the children's hospital.

University of Chicago Medical Faculty

Appointments: Richard H. Jaffe, professorial lecturer, department of pathology; John R. Lindsay, assistant professor of surgery, department of surgery; P. C. Bucy, part-time instructor in department of surgery; Alfred E. Koehler, instructor in medicine, under Lasker Foundation; Henry L. Schmitz, instructor in medicine under Lasker Foundation; J. Murray Steele, Jr., instructor in department of medicine; Willis E. Gouwens, clinical instructor, department of medicine; Malcolm A. Kemper, clinical instructor, department of surgery (genito-urinary), Rush Medical College; Paul A. Rosborough, clinical instructor, department of medicine; Dr. Ruth Taylor, physician in the health service and clinical instructor, department of medicine.

Promotions: Rudolph W. Holmes to be professor emeritus in department of obstetrics and gynecology, Rush Medical College; Lee C. Gatewood to associate clinical professor, department of medicine, Rush Medical College; Aaron E.

Kanter to associate clinical professor, department of obstetrics and gynecology; Carl W. Apfelbach to assistant professor, department of pathology, Rush Medical College; William E. Cary, Frank A. Chapman, Francis L. Foran, Roy R. Grinker, Harry L. Huber, Frank B. Kelly, Grant H. Laing, Yale N. Levinson, Marie Ortmayer, Sidney A. Portis, Howard M. Sheaff, LeRoy H. Sloan, George O. Solem, Edward J. Stieglitz, Ralph W. Trimmer and Emil G. Vrtiak to assistant clinical professors, department of medicine, Rush Medical College; Charles K. Stulik to assistant clinical professor, department of pediatrics, Rush Medical College; Margaret H. Austin to clinical instructor, department of medicine, Rush Medical College; Carl P. Bauer to clinical instructor, department of obstetrics and gynecology, Rush Medical College; William L. Buhrman to clinical instructor, department of pediatrics, Rush Medical College; George E. Miller to clinical instructor, department of medicine (materia medica and toxicology), Rush Medical College; George J. Rukstinat to instructor, department of pathology, Rush Medical College; Earl A. Zaus to clinical instructor, department of medicine, Rush Medical College.

Resignations: John F. Norton, Ph. D., associate professor, department of hygiene and bacteriology; Ruth E. Boynton, as physician in the health service and assistant clinical professor, department of medicine.

Western Reserve University School of Medicine

Faculty changes: Resignations—Frank E. Bunts, as professor of surgery and clinical surgery; he becomes professor emeritus. Roy W. Scott, as professor of medicine.

New appointments: Alfred T. Shohl, associate professor of pediatrics; Edward H. Cushing, clinical instructor in medicine; Edward Cathcart, clinical instructor in genito-urinary surgery.

Promotions: Otto Saphir, assistant professor of pathology; James D. Pilcher and John A. Toomey, assistant professors of pediatrics; Charles C. McCoy, assistant professor of roentgenology; Claude S. Beck, assistant professor of surgery; James J. Joelson, assistant professor of genito-urinary surgery; Fred C. Oldenburg, senior clinical instructor in medicine; John A. Gammel and John E. Rauschkolb, senior clinical instructors in dermatology and syphilology; Norman C. Witzel, senior instructor in pediatrics; Charles L. Ruggles, senior clinical instructor in pediatrics; Walter B. Rogers, senior clinical instructor in surgery; James L. Reycraft, senior clinical instructor in gynecology; Frank R. Lyne, senior instructor in clinical pathology; Charles S. Stone, clinical instructor in medicine; Robert E. Barney, clinical instructor in dermatology and syphilology; Edward P. Neary, senior clinical instructor in surgery, and Joyce Ian Hartman, instructor in pediatrics.

University of Pennsylvania

Edward W. Robinette, an alumnus, has given $250,000 for the establishment of a clinic for the study, treatment and prevention of diseases of the heart and circulatory system. The donor will add another $250,000 to the resources of the clinic as needed. The University has also received an anonymous gift of $100,000 for the conducting of a study of the leukemias and lymphomas. The study will be made in the Henry Phipps Institute for the Study, Prevention and Cure of Tuberculosis, Seventh and Lombard streets, under the direction of Dr. Eugene L. Opie, director of the laboratory of the institute and of the department of pathology of the university's school of medicine.

Medical College of the State of South Carolina

The state legislature has appropriated $15,000 for the establishment of a nutrition laboratory. Dr. Roe E. Remington has been appointed director of the food research laboratory and a member of the college faculty with the title of professor of nutrition. Tests will be made to determine the iodine, calcium

and other mineral contents of farm produce grown in the state to account for the absence of goiter in South Carolina.

National Board of Medical Examiners

Since the establishment of the divided examination by the National Board of Medical Examiners in 1922 and up to April 1, 1927, Harvard had furnished more candidates (518) for examination than any other medical school; Pennsylvania was second, Johns Hopkins, third, Rush, fourth, and Columbia, fifth. The office of the board has been moved to 225 South Fifteenth Street, Philadelphia. During 1927, 272 physicians completed their credits in the board's examination.

School of Hygiene and Public Health in Manila

The war department has announced that the governor general of the Philippine Islands is planning a campaign to improve the health of the Filipinos, and that an appropriation has been approved for the establishment of a school of hygiene and public health at the University of the Philippines, Manila. The school will be established with a curriculum modeled on that of the best schools of the type in the United States to train the 400 officers of the Philippine Health Service and other physicians for the prevention of disease.

Foreign Medical Students in the United States

The eighth annual report of the Institute of International Education, New York, notes that during the year 1926-1927 there was a total of 449 courses in medicine pursued by foreign students in the United States and thirty-nine in pharmacy. Porto Rico led with sixty-seven, and the Philippine Islands followed with thirty-eight; then came China with thirty-five; the West Indies, thirty-four; Canada, twenty-eight; Russia, twenty-eight; Hawaii, twenty-three, and Japan, twenty-two.

Medical Care for Remote Regions

The immense distances of the interior of the sparsely populated regions of Australia offer a peculiarly difficult problem of medical aid. A missionary society, the Australian Inland Mission, has for many years undertaken medical as well as religious work here. The so-called Barkly tableland in northwest Queensland is well served by the Queensland Ambulance Transport Brigade. The difficulty of the enormous distances between the centers has been reduced by the introduction of wireless telephony. Arrangements have now been made with the Queensland and Northern Territory Aerial Service to enable the mission to supplement its transport by an air medical service. The mission has accepted the services of Dr. K. S. V. Welch of Sydney to organize an aerial medical service in the tableland district for twelve months. A pilot and an airplane will be stationed at Cloncurry. It is expected that at least 25,000 miles will be covered during the first year. Medical aid will be brought to persons living as much as 400 miles from the nearest physician. A sense of security will thus be given to settlers who have lived under the anxiety of what might happen. The federal government and certain large commercial undertakings have given the scheme generous support. If the experiment proves a success, still wider areas will be covered.—(*J. A. M. A.*, July 7, 1928.)

Personals

Dr. Edward A. Balloch, for many years dean of the Howard University School of Medicine, although having reached the age limit for retirement, has been requested by the Board of Trustees to continue as acting dean until his successor shall have been selected. To Dr. Balloch is due much, if not all, of the credit of having secured the funds for the erection of the new medical building and the endowment fund.

Dr. Don M. Joseph, for many years associate dean and professor and head of the department of physiology in St. Louis University School of Medicine, died from pneumonia, July ninth.

Dr. Eugene R. Whitmore, professor of pathology and bacteriology in Georgetown University Department of Medicine, spent the summer in Banes, Oriente Province, Cuba, studying blackwater fever and malaria on a research assignment made by the United Fruit Company. This was Dr. Whitmore's second summer in Cuba on the same job.

Dr. Dea B. Calvin, formerly a Yale fellow, has been appointed instructor in physiological chemistry at the University of Missouri.

John G. Sinclair, Ph. D., of the department of anatomy, University of Wisconsin Medical School, has been appointed associate professor of embryology and histology in the University of Texas School of Medicine.

Dr. F. d'Herelle, of Paris, France, has been appointed professor of bacteriology in Yale University School of Medicine.

Dr. Adolph O. Pfingst has resigned as clinical professor of ophthalmology in the University of Louisville and as director of the eye clinic in the Louisville City Hospital.

Dr. Eben J. Carey has resigned as acting dean of the Marquette University School of Medicine, but will retain the directorship of the department of anatomy. At the meeting of the American Medical Association held in Minneapolis last June, Dr. Carey was awarded the silver medal, for an exhibit showing the results of excellent experimental work on the dynamics of origin, structure and repair of bone.

Shortly before Dr. Hideyo Noguchi died, the Emperor of Japan conferred on him the Imperial Order of the Second Class of the Rising Sun as a recognition of his discovery of the course of yellow fever.

Dr. Thomas Addis, professor of medicine in Stanford University School of Medicine, has been awarded the Gibles memorial prize of $1,000 in recognition of his work on nephritis. Further research will be financed with this prize.

Dr. David Riesman, professor of clinical medicine in the University of Pennsylvania School of Medicine, recently had conferred on him Knighthood in the Order of the Crown of Italy.

Dr. Wm. L. Coplin, emeritus professor of pathology and bacteriology in the Jefferson Medical College, Philadelphia, died in May, aged 63 years.

"The Sky Rider" is the title of a collection of poems written by Dr. Wade C. Oliver, professor of bacteriology in the Long Island College Hospital Medical School.

Dr. G. Canby Robinson, director of the medical center of Cornell University and New York Hospital, received the honorary degree of LL. D. from Washington University, St. Louis, in June.

Dr. M. T. Townsend, of St. John's College, Maryland, has accepted an associate professorship in histology and embryology in the University of Oklahoma Medical School.

Dr. Oscar V. Batson, professor of anatomy, University of Cincinnati College of Medicine, has accepted a similar position in the Graduate School of Medicine of the University of Pennsylvania.

Dr. Cyrus W. Rutherford, associate in ophthalmology, Indiana University School of Medicine, has accepted the position of associate professor and acting head of the department of ophthalmology in the College of Medicine of the State University of Iowa.

Dr. Edwin P. Lehman, Washington University Medical School, has been appointed head of the department of surgery and gynecology in the Department of Medicine, University of Virginia.

Dr. Andrew L. Skoog has resigned as professor and head of the department of neuropsychiatry in the medical school of the University of Kansas.

Dr. Paul M. Moore, Jr., Detroit, has been appointed instructor in the nose and throat department at the State University of Iowa College of Medicine.

Dr. Herman G. Weiskotten, dean and professor of pathology of the Syracuse University College of Medicine, has resigned as health officer of the city of Syracuse in order to give all his time to college work.

Dr. Arthur L. Tatum, associate professor of pharmacology, University of Chicago, has accepted a professorship in the department of pharmacology at the University of Wisconsin.

Dr. Alexander A. Weech, Baltimore, will spend one year in Peking Union Medical College, Peking, China, as associate professor of pediatrics.

Dr. Henry E. Michelson has been appointed professor of dermatology and syphilology in the University of Minnesota Medical School.

Dr. Charles Weiss has been appointed associate professor of experimental pathology, department of ophthalmology, in Washington University Medical School, St. Louis.

Dr. Samuel C. James, formerly dean of the University Medical College, Kansas City, Mo., and president of this Association in 1904, is now living at Gulfport, Mississippi, having retired from practice because of ill health.

Dr. Walter L. Niles, dean Cornell University Medical College for many years, resigned to become a member of the Joint Administrative Board of the New York Hospital, Cornell University Medical College unit.

Dr. Robert F. Ruttan, director of the department of chemistry in McGill University Faculty of Medicine, has retired.

Dr. Albert E. Bulson, Jr., has been appointed professor and head of the department of ophthalmology in the Indiana University School of Medicine.

Dr. Francis L. Lederer has been appointed assistant professor of laryngology, rhinology and otology on half time in the University of Illinois College of Medicine.

The China Medical Board of the Rockefeller Foundation has appointed Dr. Max M. Zinninger professor of surgery at the Peking Union Medical College. Dr. Zinninger has been assistant professor of surgery in the Cincinnati College of Medicine.

Dr. William D. Cutter, late dean of the New York Post Graduate Medical School, has been appointed acting dean of the new medical school of the University of Southern California, Los Angeles.

Abstracts of Current Literature

Medical Education as Seen by a Layman

Mr. William L. Felter, principal of a high school in Brooklyn, and an acknowledged authority on pedagogue, delivered an address at the last meeting of the alumni association of the Long Island College Hospital and made several statements anent teaching in medical schools which are well worth pondering on. They are not new to medical educators, nor are they being unheeded. Effort is being made in several schools to recast teaching in accordance with modern views. Thus far, success has attended these efforts.

Mr. Felter said:

The establishment of the quiz system was a confession of the incompleteness of the lecture method, a method that I regret to say is still too largely employed today in college and university. Students cannot learn and do not learn simply by attendance on lectures; otherwise regular attendants at the Brooklyn Institute lectures would be qualified to act as college professors and every regular church attendant would qualify as a theologian. This does not mean that lectures habitues learn nothing. They learn something but that something is likely to be precious little. The same amount of time spent upon well-chosen books would yield a richer return. The mental reactions to lectures of all kinds, law, medicine, theology, pedagogy, are the same, as varied as there are types of minds. The lecturer invariably forgets the dictum of the French savant, Talleyrand, that language is given to us to conceal thought. The speaker has no opportunity of testing the reactions of his audience. He depends upon faith that his listeners will hear and understand, but any so-called instructor of this variety who has tested his work knows how foolish is this faith. The pure lecture system is the most ineffectual method of instruction ever devised. It is not only pure but poor.

The mind is not a blank sheet of paper on which the speaker may write his thoughts. Nor is it a receptacle into which the intellectual delicatessen dealer may pour the soup. The lecturer cannot convey his information as he desires because his information has come to him as a personal acquisition with the exercise of certain mental faculties. He has dug it out for himself and has worked hard in doing so, but his repeating of what he has discovered will never do for the pupils what the lecturer acquired for himself. We learn to do by doing under competent guidance. Self activity is the law of mental development, not of one faculty but of all faculties. To train the memory alone, as the lecture invariably does, is to stunt the other powers of the mind. There is as much difference between the lecture method and that of class room instruction as there is between exposing a patient to a disease and the patient actually having the disease.

No one regrets more than the speaker the prevalence of the lecture system in schools of pedagogy. Here are institutions supposedly teaching correct methods of instruction and yet at the same time violating fundamental principles of education. The use of this system at times, I must confess, depends largely on the caliber of the student body. So many attend simply to earn credits that a teacher insisting upon correct methods, including home study, would speedily find himself without students. It is a question of giving the students the method they desire rather than what is best for them.

The question might fairly be asked, "Why then is the lecture system used?" The answer is because it is the cheapest method of instruction. One man may lecture to several hundred students, while class teachers would be many for the same number of students. Another

reason is that it is the laziest method. It requires much less mental energy to attempt to pour in learning than to discover misconceptions, correct them, and also to meet possible objections to one's own teaching.

Since medicine is an art there must be an abundance of practice and a minimum of theory or, at all events, a better balance between the two than now obtains. The lecturer deals largely with theory and personal experience, while what the would-be physician needs most of all is a sufficient amount of theory as a foundation upon which to erect the structure of his medical knowledge. Theory first by all means but reinforced and supplemented by enormous quantities of practice. It seems to me as an outsider that it is just at this point that medical instruction is at its worst and weakest. Hospital practice, bed side practice in profusion should be insisted upon as a sine qua non for every prospective physician. Where this is impossible then the next best thing is for the fledgling to associate himself with an old practitioner and learn by personal observation and tuition the symptoms of disease and the proper methods of treatment.

When Professor Hanus was made professor of pedagogy at Harvard some years ago, Dr. Eliot, the then president, turned him loose on the college professors with the result, as President Eliot told me in person, that the average teaching power of the university rose twenty-five per cent.

What shall we then say, that the lecture method should be entirely eliminated? By no means. The work has its distinct place in the general presentation work and in clinical procedure, and relations to other topics are set forth. It has a place too in demonstration work and in clinical procedure. Likewise, it may be used for purposes of summation at the end of a course. In setting forth the ideals of the profession and in inspiring students it is invaluable.

What then is a complete system of medical instruction? Certainly not one that depends so exclusively upon the lecture method as was current in the earlier years. Changes have been made for the better. Full-time professors have replaced the part-time in large measure. There have been both gains and losses by this change, for the part-time man brings to his work the latest information in his chosen field gained by personal experience.

There has been more class room instruction. This arrangement has given the instructor smaller groups to handle, afforded adequate opportunity to test mental reactions, given an adequate chance to separate the sheep from the goats and removed the emphasis from the cram at the end of the course to the daily preparation and recitation. The great failure of the pure lecture system is that there are no adequate tests along the line. Everything depends upon the one examination at the end of the course. The individual misconceptions have not been cleared up as the student progresses through the course and there is no proper means of ascertaining whether the student by home study is up to the points the lecturer is discussing. Every good lesson is an illustration of cooperation and a failure to hold the student up to his work all through the course inevitably means a lack of cooperation. Emerson tells us that men are as lazy as they dare be and medical students are men. Class room instruction must supplement the general lecture. After all, this is but a replacement of the quiz method, but with this difference; the quiz largely tested knowledge while the class room method develops a knowledge of the subject as well as tests this knowledge. The latter plan aims to make an independent student at work every day of his college life.

Every device that appeals to the eye must be included, pictorial illustrations in the textbooks, stereopticon slides, the moving picture, the clinical demonstration, bedside practice and interneship. We must recall that by far the largest number of mental impressions comes to us over the highway of sight and we are working along the lines of the least mental resistance when we follow the clue that nature has given us. Then, too, I profoundly believe that no profes-

sor in any subject should be permitted to teach without a working knowledge of pedagogy. The subject is not difficult, but it is tremendously important. There are right ways and wrong ways of teaching just as there are right ways and wrong ways of treating a specific disease, and it is not too much to expect the professor to learn the right ways of teaching his profession. Any professional institution may have its teaching quality appraised by experts and where this has been done great gains have resulted to the profession.

Methods of Educational Extension

Medical education is extended mainly in two ways. First, by so-called field programs in which county societies lead all local endeavors. These are assisted, from time to time, by the State Society or other extra local speakers or general knowledge. The increased opportunity for frequent contracts of men in their local fields is of greatest importance for economic, social and educational values. The Department of Postgraduate Medical Education (of the University of Michigan.—Ed.) will participate in and supplement this division of work as opportunity may afford and, furthermore, it will be considered an important function of the department to systematically promote and initiate this division of medical education. In a second and very important way, what has been designated consecutive or academically organized and controlled study courses in Medicine and Surgery, are giving fundamental and substantial results in preparing men for the specialties. An increasing number of the leading specialties are requiring certificates of qualification for their recognized members. For those members of the profession upon whom these requirements are made and also for those interested in advanced knowledge for the greater service it enables them to render humanity, there should be tempting and convenient opportunities for further medical education. In fulfillment of our obligation to the commonwealth and in the cause of medical education, the Committee on Postgraduate Medical Education for the state of Michigan offers an outline of the more detailed program of further activities now in preparation. Every possible assistance will be given county societies in their scientific work, including assistance in the arrangement of programs and the supplying of speakers. There will be further development of the present plan of One-Day Postgraduate District Conferences. These have been found to be increasingly popular and useful. The organization of two and three-day clinical programs, patterned after the present clinic. Where possible, this will be done in connection with hospitals in the larger cities. Flint and Grand Rapids have their programs under way for the early autumn and Ann Arbor will give a Three-Day Clinic at the University Hospital during the football season. The most common request from our members has been for the two to three-day clinical conferences as outlined above, but there is a considerable number who ask for short intensive courses ranging from two to six weeks. At the present time, few doctors take more than a day or two at a time, away from their work to attend medical meetings. It is estimated that about 5 per cent take a month or more at yearly intervals. While this number does not seem great, it will be greatly increased when attractive opportunities are more readily available. To provide for this group, carefully graded courses, two to six weeks in length, are now in the process of preparation. It is commonly believed that short cuts to specialties are unwarranted. We do, however, contemplate short period courses to specialists in their specialties, and the gradual development of complete courses for higher degrees. The University has responded to the recommendations of the State Society by the establishment of a special department to cooperate with it, in postgraduate development.—James D. Bruce, *Mich. State M. Soc. J.*, 27:319 (June) 1928.

Full-Time Clinical Teachers

There are many phases to this situation. I shall, however, limit my statement to the one which interests us from

the standpoint of medical education. I refer specifically to the organization of certain university medical schools and hospitals on the so-called full-time clinical basis: the placing of clinical teachers on salaries, allowing them to take care of pay patients, but only on the condition that the fees for such services are paid, not to the medical man, but to the institution. This so-called full-time clinical teacher is an American experiment which did not originate in the medical profession but in the minds of laboratory workers and laymen. It has never had the support of the medical profession. It has gone far because it has received ample financial support. The universities which have adopted this plan have been badly advised in this matter and the time has come when the medical profession should take a definite stand on this subject and make it clear to such institutions that an institution cannot practice medicine and that medical education must be developed on sound ethical lines that can receive the support of the medical profession. There is already danger of the development of a line of cleavage, of a schism, between the medical profession and the universities with full-time medical faculties, which would be unfortunate.

The logical and ethical solution of this matter is very simple. The teacher of clinical medicine in any field should be, first and foremost, a great clinician. It goes without saying that he must be a successful teacher and profoundly interested in advancing knowledge; but his function in life is that of a great clinician, a great authority in his special clinical field. He must be a great consultant and his services should be at the disposal of the medical profession and the public. He should, of course, not be in the ordinary practice of medicine, spending his entire day in house to house calls and office work, but he should be in active consulting practice. He should be prepared to solve the difficult clinical problems referred to him and for these services he should receive from such patients proper compensation. When a well-to-do patient receives medical services from a medical man he should pay a proper fee for such services and this fee should go to the medical man rendering such personal and individual services and not to an institution. The organized medical profession of this country, the American Medical Association, should make is clear from the standpoint, not only of medical ethics but from the broader standpoint of general ethics, that it regards the payment of a fee for medical services to an institution, instead of to the medical man rendering such service, as unethical and wrong. Such an arrangement cannot be accepted by the organized medical profession. The organized legal profession is definitely on record in this matter and is opposed to an institution practicing law.

The experiment of full-time clinical teachers has been given a fair trial and has proved to be a failure. It is impossible to secure and retain permanently first-class men on this unethical basis. Very few of the men who have been tempted by the offer of an important professorship, and accepted it, believe in the plan or retain these positions for long.

The experience of the medical educators of the world has gradually crystallized in a scheme of organization of teachers in clinical departments which can be safely adopted. It is that of placing the clinical teacher in the same position as other university teachers, giving him the same salary and expecting him to make his university position his life's work, his first consideration. He should devote as much time to his position as do other university professors; but the university should also expect him to be a recognized authority in his special field. The university should recognize the fact that the practice of medicine is an essential part of the teaching of clinical medicine, that such practice is a part of his duties, a part of his education, and a part of his clinical research work; and for such service he, and he alone, should receive the proper compensation from the patients who are able to pay for medical services. There should be no interference with his liberty of action. He must not, of course, permit anything to interfere with the full performance of his university work. Any professor in any department who does

this can be easily and properly eliminated.—ARTHUR DEAN BEVAN, *J. A. M. A.*, June 16, 1928, p. 1954.

Big Books and Much Teaching

Basing the conclusions on the forty-one replies received to a questionnaire, the average freshman mortality is 10 per cent, ranging from a low 2 per cent at Rush and the Johns Hopkins; 5 per cent at Cornell, Leland Stanford and North Carolina; 22 per cent at Baylor; up to 30 per cent at Tulane and Emory. The average mortality for sophomores is apparently 2 per cent. Many of the large schools have no sophomore mortality except for illness and the smaller schools with less financial resources tend to a 5 per cent mortality. Why this variation in freshman mortality? What are the conditions that prevail that credit South Carolina with only 10 per cent and Tulane with 30 per cent. Who standardizes the standards? Tulane seems to afford its freshman ample leisure for study whereas the Emory freshman schedule seems full and yet both have the same mortality. Is the mortality the fault of the student or the professor or both? Subjects differ in difficulty and professors differ in their ability to present the subject, in their ability to put themselves in the student's place, and in an over estimate on the value of their subjects. Library and reference work may be overdone and the student nonplussed and discouraged. A syllabus systematizes and circumscribes the essential facts in any course. Does the average medical school give sufficient attention to a reduction of the mortality among the freshmen students? What reason is there for such variation in mortality among schools in the same section of the country and of relatively the same standing? Does not the fault lie primarily at the door of the professor and the school?—STEWART R. ROBERTS, *Southern M. J.*, 21:551 (July) 1928.

Defects in Medical Education

Despite the great improvements in medical education which have followed the work of the Council there has been undoubtedly a tendency to overstandardize the curriculums of the medical schools of the country. Some states have erred in excessive and unduly specific demands on those applying for a license to practice. There have been those who feared, and who fear, that through exaggerated attempts at standardization there is danger of killing that independence and initiative in serious institutions of learning without which normal progress is impossible. Rightly or wrongly, others have insisted and continue to insist that the requirements for admission to schools of medicine have been so rigidly regulated that valuable men are being lost to the medical profession. No doubt some good men have been lost, but from how many ill fitted has the public been spared?

Yet others regret the loss of teaching opportunities for some excellent instructors formerly associated with proprietary schools which have disappeared, an objection which is answered to a certain extent by the opportunities offered for postgraduate instruction to interns and, I think, to a greater extent, by the realization that the best postgraduate opportunities are always to be found in assisting eminent practitioners or students.

The admirable report of Abraham Flexner on the medical schools of America was followed by manifestations of special and munificent interest in problems of medical education on the part primarily of foundations which had already contributed open-handedly toward medical research and toward the elucidation of questions relating to the public health, notably those organizations which we owe to the generosity and vision of the Rockefellers. As a result of all this not only have the schools of medicine in this country become more and more children of its universities but academic methods and standards have been brought into medical teaching to a degree that would have seemed incredible but a few years ago. Interesting experiments have been carried out in the management of clinical departments resulting in better direction and organization by a responsible head so well provided for financially that he is more

able to give the greater part of his time to university work and to choosing his clinical and laboratory assistants on the basis of merit alone. Moreover, in the better schools, adequate laboratories with suitable endowment have been provided for the clinical services, and through more generous salaries the opportunity has been given as never before to young men of promise to spend five, ten or fifteen years after their graduation in an active medical unit acquiring clinical experience while devoting themselves at the same time to the study of special problems. These laboratories have been an immense blessing to the university, to the hospital and to its whole staff, affording to the clinician opportunities for investigation which had never been his before—opportunities which in many instances have been seized on with avidity. But with all these advances and advantages there have been associated circumstances which have provoked active criticism—criticism which has been directed largely at certain details of organization of some of the earlier of these university clinics.

Somehow or other this effort to place clinical divisions on a fuller university basis has come to be referred to as the "full-time plan," a deplorable misnomer against which I have never ceased to protest. This very expression has helped to fasten on the public certain false ideas which have become strangely prevalent and have given rise to heated discussion.

I will merely refer to three of the most important of these misconceptions; namely, that in some schools an understanding exists that the professor may not engage in private consultations. I know of no such school.

Secondly, that the understanding existing in some clinics that the receipts of the professor from his private consultations shall be turned into the budget of his department is a vital principle rather than an experimental detail of the plan of organization of the clinic.

The third and most important is the false conception that the ultimate ideal of the university school of medicine is to place clinical teaching wholly in the hands of university professors and gradually to exclude the practitioner from hospital and school.

The sole object of these efforts has been to free, not to restrict, the professor; to make it possible through adequate salary for him to devote the time that he will to his clinic and his university work, and to afford the department an endowment suitable for the maintenance of the subsidiary divisions with their laboratories, and for the salaries of those who may preside over these laboratories, while doing their share of the teaching and acquiring that invaluable experience best afforded by a service in a large and active clinic.

Whatever criticism may be justified of some details of conception and of administration, the effort to place the clinical departments of our schools of medicine on a fuller university basis have been productive of great good.

There is a strong feeling in many of the better schools of medicine that we have been trying to crowd too much into a four years' course. And here let me say that I wish I might live to see the day when such elementary methods as a prescribed four years' course had disappeared from American medical education; when our schools were so organized that a student of medicine might be treated as a man rather than as a schoolboy. More and more we are realizing that our schools should give a thorough training in the essential foundations on which medicine must be practiced, instruction which must include a considerable amount of practical experience in ward, outpatient department, laboratory and operating room, while offering opportunities later for special studies for advanced men. The foundations must be good. A man must learn the basic principles; he must have practical training in the science and art of diagnosis and therapy and the principles of surgery, and must gain a familiarity in the use of the common instruments of precision which he must employ by bedside, in consulting room and in laboratory. The medical school is not the place for the training of specialists, nor can one emerge from a school of medicine a skilled surgeon. The specialist

who has not had a good basic medical training is a danger to society. Too early specialization is one of the great faults of modern American education.—W. S. THAYER, *J. A. M. A.*, June 16, 1928.

Domiciliary Medicine in Fourth Year Medical Teaching

The term domiciliary medicine signifies the treatment of patients in their homes. This paper deals with the use of clinical material in the home for teaching purposes and describes the work as it has been carried on in the Medical Department of the University of Georgia for the past two and a half years.

In the early months of 1925 a decision was made to have one section of the fourth year class assigned to special duty in connection with these patients, so that the students might see and study types of cases that are usually not seen in the hospital. In addition, they were to be given the added advantage of the more intimate teaching of bedside medicine and an experience that cannot be gained elsewhere than in the patient's home.

Augusta has a population of between 55,000 and 60,000 persons, nearly half of whom are negroes.

By virtue of a binding contract with the city and county, the medical school enjoys the privilege of exercising medical and surgical control over all the free patients in the city and county.

The plan of procedure is as follows: The senior class is divided into three sections of about ten each. One of these sections is put on this service each trimester of eleven weeks. Within the hospital, space for the group is provided, with tables for writing, chart paper, pigeonholes for current records, and filing cases for the charts of discharged patients.

In addition, each student is supplied with a kit containing a Wassermann syringe and needles, specimen bottles, a Tallqvist scale and tongue depressors. The students furnish their own sphygmomanometers, hemacytometers, thermometers and flashlights.

Transportation by automobile is practically universal and as a rule two students go together, each having the advantage of observing the patient assigned to the other. A small monthly allowance is made for gasoline consumption or street car fare.

Hanging in the office of the clerk who receives the free calls is a chart bearing the names of the members of the group assigned to this service. On this chart, in rotation, the physician in charge assigns those of the patients he sees that he feels are suitable for study.

As soon as a patient is assigned to a student, the latter visits the patient's home and takes a complete history of the case. Following this, he makes a complete physical examination and obtains specimens for laboratory examination. The latter examination includes a leukocyte count, Wassermann test and urinalysis (routine). Specimens of feces, sputum and blood (for erythrocyte count or hemoglobin determination, Widal test, blood culture or blood analysis) are obtained for examination if indicated.

Returning to the hospital the student writes a full record of the history and physical examinations and later adds the laboratory reactions as they are made available. Each day he is required to visit patients acutely ill and every second or third day patients with chronic illness. On the chart he notes the progress of the patient. The physician in charge is to be called in consultation whenever necessary and advised immediately of the unsatisfactory progress of the patient.

The physician in charge on his first visit to the patient makes an examination and prescribes the treatment. On a slip provided for that purpose he outlines the treatment, writing out the prescriptions of the medicines he gives, but does not tell his impression of the case. Further treatment is added by the student in charge of the case, with the approval of the head.

Once each week this group assembles in the hospital for a history meeting with the physician in charge. Others attending these meetings are the full-time professor of medicine and also, at times, the full-time professor of surgery. At

this meeting the histories of patients who were dismissed during the week just past are discussed and final diagnoses are written on the faces of the charts.

Following the meetings, the charts are filed in special cabinets provided for the purpose and kept for future reference. Quite often after patients are sent to the hospital, members of the house staff find these charts of considerable help.

Patients on the outside service that are sent to the hospital are discharged from the former service and, of course, are assigned to the students on the medical or surgical service in the hospital, but students on the outside service are encouraged to follow the progress of such patients, and they usually do so with keen interest.—G. L. KELLY AND IRVINE PHINIZY, *J. A. M. A.*, June 9, 1928, p. 1185.

Criticism of Medical Teaching

That section of my mind devoted to medical teaching and medical school experience has long been under three distinct impressions. (1) We are attempting to teach the medical student too much. (2) The academic mortality among freshmen students is too high. (3) The text books for the students are too big. Research and contributions from chemistry, bacteriology, pathology, pharmacology and physiology have in the last fifty years so upheaved clinical medicine that there is a sharp distinction of matter, method and form between the last two clinical years and the first two fundamental years. Until very recently and in some schools not at all, there is no clinical teaching in the first two years. The teachers in the first half of the medical course are men who are scholastic specialists in a particular narrow field of knowledge, as embryology or gross anatomy, often not even graduates in medicine, whose mental constitution has led them away from practice and the art of medicine. Think of a professor of pharmacology without the degree of Doctor of Medicine or any clinical experience in the art. With the possible exception of teachers of pathology, as a rule, these men are not even in touch with the ways and problems of clinical medicine. It is as if a school of theology was manned by teachers who are not preachers, or who had never preached and cared little for the church or the duties of pastor or priest. Naturally, the average tendency of such teachers however scholarly or gifted, is to accent the subject for which they are responsible without relating the science to the broader field of medicine. Furthermore, in the present state of the crowded curriculum with the overwhelming mass of fact and detail accumulated in the big books of today, they have not time even if they were capable. Yet in the hands of the teachers of the first year rests largely the passing or failure of the students, and the teachers of anatomy, gross and microscopic, embryology and chemistry, determine those who shall practice medicine by determining those who shall ascend to the second year. It would seem that the first duty of teaching in the first year is to let the student know what it is all about, give him time to grasp his subject, be patient with his development and at least record against him no failures until the first half year has passed. The curriculum is a jumble of successive subjects and hours running with military precision often from eight to five, the teacher often wanting more time and the student confused by the persistent bustle and hurry. There are so many professors, that few of them know the students who rush from histology to gross anatomy to chemistry, or from therapeutics to syphilis to medicine, from optics to dermatology. The personal element is eliminated and no true education ever can eliminate the personal. Only one student in eight does any cultural reading during the five years of medicine and internship. We are training a cultureless profession except for microns and facts. The practice of medicine, the art of medicine, the relief of suffering, the pride of clinical labor, is discounted in favor of research and mere memory, knowledge, statistics and marks.—STEWART R. ROBERTS, *Southern M. J.*, 21:548 (July) 1928.

Place of Biochemistry in Medicine

The practical applications of biochemistry are of great use for the solution of the problems which confront us at the bedside; they help in the diagnosis, prognosis, and treatment of disease. That in itself is enough to justify the establishment of biochemical laboratories in connection with all hospitals. In addition to its teaching, every university and place of advanced study has as one of its duties the furtherance of original research, and that the advanced teacher will do his work better if he has himself advanced knowledge of the subject which he teaches. Medicine may be looked on from several distinct standpoints, but, in importance, the chemical standpoint is second to none, as is becoming more clearly recognized from year to year. Biochemistry is not merely a useful preliminary subject of study for the medical man, but is part of the very essence of his science, and, through his science, of his art. Members of different genera and species of animals and plants differ from each other in chemical structure and chemical life, and evidence is accumulating that no two individuals of a species are any more identical in chemistry than in form. It would seem that there is a chemical basis for those departures from type which are styled mutations, and I for one believe that the liabilities of certain individuals to, or their immunity from, certain maladies—what may be called their diatheses—have chemical origins. Undoubtedly the mechanisms by which the body protects itself against bacterial invasions or poisons introduced are, for the most part, chemical; and it is not necessary to point out the importance of the parts played in the animal economy by such chemical substances as hormones and vitamins. If all this be true it is obvious that a chemical outlook is needful for the comprehension of morbid processes, and that there are unlimited openings for research in biochemistry. —Archibald Garrod, *British M. J.*, 1:1101 (June 30) 1928.

What is Biophysics?

In some quarters, biophysics has quite unfortunately been regarded as the application to physiology and medicine of certain more recent developments in physics. So considered, it bears about the same relationship to the subject I have in mind that organic chemistry does to biochemistry. Its parentage is physics; it lacks the chromosomes of biology. In other quarters, a tendency exists to confuse biophysics with general physiology. But the latter science employs chemical as well as physical methods.

What, then, should the science of biophysics as an offspring of physiology include? Its scope and natural limitations are indeed difficult to define. For, while we may be quite positive as to what the science should not be, we cannot be so certain as to what it should include. We can note well directed "biophysical tendencies" in all physiology laboratories, but the interests are still so diversified that it is difficult to predict where the bounds will be drawn. I presume that the science should include all investigations that seek to establish the physical changes responsible for the reactions of living matter, and should incorporate at least a large proportion of investigations concerned with the ultimate mechanisms of living matter by the most exact physical methods, new and old. But there will always be a certain amount of overlapping, just as is now the case in the related sciences of physiology, pharmacology and biochemistry.

Physiologists of today are entrusted with the prenatal care of this developing science and, in this capacity, must exercise every effort so that it may attain a proper start in life. We must see to it that it receives adequate sustenance and that it is neither asphyxiated nor prematurely born. Every effort should be made to assist junior members in a department in acquiring such contacts with the physical and mathematical sciences as are necessary for their application to the fundamental problems of physiology. Men with competent training in physical science should likewise be added to the physiology staffs, but they should not merely be added in the capacity of advisers; they must be trained and developed into physiologic investi-

gators as well. Then, as they become enamored of the unbounded possibilities which exist in unraveling the mysteries of life processes, their previous physical training can be given free rein. Only by this process of developing men who have an equally broad insight into physical and physiologic problems can we hope to develop the real science of biophysics and make its contributions of value to science and medicine alike.—C. J. WIGGERS, *J. A. M. A.*, July 28, 1928, p. 270.

New Methods and New Fields in Medicine

New methods open up new fields of research, and, especially when they can be applied conveniently in the clinic, often greatly extend our knowledge of disease and furnish satisfactory explanations of processes and symptoms hitherto shrouded in mystery. These results may be of great practical importance, whether they are negative or positive, for in the former case we are thrown back on that most subtle and fascinating of all methods of diagnosis—the method of exclusion. Positive results obtained with these methods correspond to and really extend the "pathognomonic symptoms" of the older masters, who in the absence of these turned to diagnosis by exclusion. Everyone familiar with modern medicine realizes that in many patients the repeated use of certain judiciously selected laboratory methods furnishes necessary guides in prognosis and treatment. Here the important point is, of course, the choice of the test or tests to be used and the appropriate occasions for their application. When a new method of technic that promises really to shed light on the problems of disease is invented, within reason and safety, practically no limit is to be set on its trial. But when its possibilities for extending knowledge have been exhausted and its sphere of usefulness has been defined, it falls into the list of methods for occasional and special use; it becomes simply one of a host of tools, and the clever and trained physician, like master workmen in other fields, will select the tried tool or tools which his experience has proved to be most efficient for each particular problem. Has not the time arrived when we should take stock of our tools, and submit the question of the actual value of our procedures to critical analysis? Indeed, I strongly suspect that we of the present day are longer on tools and "facts" than we are on illuminating ideas. In all too many provinces of medicine we are anxiously awaiting ideas, which will correlate and clarify the facts that we have accumulated so laboriously. There is hardly a domain of medicine that does not cry out for the brilliant, penetrating light of ideas which will illuminate the field, classify into logical order the facts already gathered and indicate with accuracy the links in the chain of knowledge that need yet to be forged.—WM. T. HOWARD, JR.: *Ohio State M. J.*, 24:633 (Aug.) 1928.

Medical Education Today

It is marvelous, the gain in knowledge imparted to a student now, compared to the old days. Our graduates now are sent out with a mass of information undreamed of by our graduate of forty years ago. Is it too massive? Should there be more wisdom to apply the science we may have? May not the art of Laennec and some other older valuable procedures be overshadowed by an excess of laboratory and new science? I would not minimize the value of the laboratory procedures, for they have contributed much to the science of medicine. I simply would not have them overshadow the old and tried clinical art which has rendered so much service to mankind. Let both be measured by the test of service. Yes, the students are full of information. Crammed full. Some are specialists at commencement. The old times has difficulty in understanding just how one may become a satisfactory specialist without a broad general medical experience. That was the old way of specializing.

I wonder if all our medical schools are teaching the fundamental subjects as intensively as was done in the old schools. We could not be overtaught in anatomy

and physiology. Our universities now have many full-time teachers who are not doctors of medicine. Their point of view is not the same as that of the practicing doctor of medicine and the subject is taught as an abstract science without thought of rendering service. May we not be losing something here in our university medical education? It is axiomatic that we must have a good foundation if we would rear a substantial structure. The neglect of the fundamentals and the cramming of students with specialties must be erroneous. Let the student's commencement be indeed the beginning. Let him build his knowledge on a rock foundation. If he is properly trained to think he will be all right. How else have we secured our many outstanding senior medical and surgical men of today? Another curious and absurd thing to me is the practice of some in some of our schools and universities of putting undergraduate students into research work. Research seems to be an enticing word. Why an immature and undeveloped student should be put into such work when he is not fundamentally educated, seems little short of folly and a great waste of time, as well as an injustice to a student. Research is fitting for the mature graduate student who becomes interested in particular problems and has the zeal to carry on.—F. G. Nifong: *J. Missouri State M. Assn.*, July, 1928, p. 289.

Passing of the Teacher

What the student takes from the lecture of a good clinical teacher is by no means limited to a mass of facts that might be acquired quite as well from his books; the student is introduced into the mind of his teacher, he sees how the latter approaches his problem and is himself moulded by the example of his teacher. It is unthinkable to fail to recognize that the personalities of clinical teachers at Billroth, Trousseau, Charcot, Osler, Freirichs, Gerhardt have been without influence on young physicians. —Professor Friedrich Muller of Munich.

This is refreshing in an age when everything is turned to research, and true pedagogics is being more or less disparaged. While the importance of research is not likely to be overemphasized, the importance of teaching should be held in equally high esteem. The teacher is the interpreter, often the evaluator, of the findings of the research laboratory; and if he is blessed with a pleasing personality and an enthusiasm that is contagious, his influence on his generation is beyond question. How many recall such persons not only in medicine but in their earlier academic days whose influence on their lives has been priceless.—*Michigan State M. Soc. J.*, 27:534 (Aug.) 1928.

Correlation in Teaching During Preclinical Terms

Shall we insist on the M. D. as a prerequisite for teachers in the preclinical branches? Even were it possible to do so (but it isn't), I would unqualifiedly say, no. To my mind the prevailing defects (and I believe they are real ones) can be overcome if they are realized and the necessary effort made. Teachers of the preclinical sciences, be they Ph. Ds or M. Ds, should seek and cultivate close association with and both advice and aid from their clinical colleagues, many of whom are sufficiently trained and interested in the fundamental branches to be of real service. In addition, the head of each and every one of the preclinical divisions must have the active assistance of clinicians if students are to profit to the full from these courses. This request of the preclinical teacher for assistance from the clinicians should not be confined, as it usually is to the request that the clinicians should as often as possible show to their classes, the clinical bearing and importance of facts or theories from the clinical sciences nor to a demand that during the clinical years place be made for additional instruction in his branch, valuable as such course might be. He should invite the clinicians from time to time to present to his class actual patients, for the understanding and appreciation of whose conditions, a knowledge of certain facts or theories of the preclinical science is essential. To anatomic

students, the surgeon may show, with roentgen-ray pictures, fracture or dislocation cases, pointing out the influence of muscles and tendons in causing displacement or deformity; or the neurologist, using plates or lantern slides of normal and pathologic cord sections, may show patients with different cord lesions and correlate anatomic lesion with resultant disturbance of function. In students in biochemistry and physiology, the demonstration, with history, laboratory findings and records of cases of diabetes, thyroid disturbance, gout, nephritis, dyspnea, cardiac arrhythmias, and soforth, could not fail to increase interest in and enthusiasm for the study of these preclinical subjects and should spur the students on to a greater effort. Moreover such clinics should aid in clarifying and fixing more firmly the student's knowledge and understanding of scientific fact and theory. Such examples should be sufficient to indicate that occasional clinics, showing to students in the preclinical terms a moderate number of carefully chosen and skillfully presented patients, would be useful in the teaching of the preclinical sciences. Correlation should also obtain among the preclinical divisions. In the teaching of one of these, pharmacology, there is of necessity a close correlation with physiology. It is of great importance that in teaching pharmacology the teacher should bear in mind not only correlation with the department of physiology but also with those of biochemistry, anatomy, bacteriology and pathology. Relatively seldom is there sufficient attention paid to correlating this course with any of the preclinical subjects, and particularly the bearing of pathology and bacteriology and of pharmacology on each other is seldom fully realized or sufficiently stressed. Partly because it is much more difficult but also because its value is not sufficiently realized, all too often anatomy and biocemistry departments fail even to attempt to correlate with the other preclinical branches and most teachers of physiology and of pathology and bacteriology fail sufficiently to appreciate the value of and opportunities for correlating their teaching with that of the other preclinical subjects. The remedy is a closer association between all teachers in the preclinical divisions, permitting of interchange of ideas, discussion of problems, both pedagogic and investigative and seeking for and, when asked to do so, giving advice and assistance to colleagues in the different departments. Combination seminars, journal clubs and faculty lunch table, especially the latter, should aid in attaining these objects.—J. T. HALSEY: *Southern M. J.*, 21:674 (Aug.) 1928.

Interrelations of Physiology and Internal Medicine

At Western Reserve University School of Medicine, instruction in physiology begins toward the end of the first year, i. e., after the students have acquired an insight into anatomy, histology, embryology and biochemistry. Coordination with the premedical subjects of chemistry and biology has been attained. In an elementary course of approximately 100 hours, we aim to stress the application of physical and mathematical sciences in the study of life phenomena. Indeed, the course is growing more and more into what may be defined as an elementary course in biophysics. Interest in this phase of physiology must be established in the opening session—it must not only be maintained but also grow as the work progresses. This is impossible if the student is deluged with purely physical experiments seasoned only with a promise of applicability at some later date. On the contrary, the student must at once be introduced by lecture and experiment to simple phenomena of living tissues and must learn to apply common methods by which they can be studied in the laboratory. We start, therefore, with a study of the phenomena of muscular contraction, and follow this by a consideration of the blood, secretion, nerve reflexes and special senses. While the student thus acquires a knowledge of certain fundamental functions step by step, experiments, demonstrations and talks are opportunely introduced to show how these fundamental phenomena can be explained by physical forces and resolved by the

application of physical methods. But the real enthusiasm of students is aroused in carefully conducted conferences in which the results of laboratory experiments are discussed and correlated with information gained by reading and by lectures. This interest aroused in students is exhibited no less by the excited arguments and discussions one overhears in the corridors, and by the zeal with which new proof of this or that conception is sought in our library, than by the animation with which general discussion is entered into in the classroom.

But such general enthusiasms could not long be maintained, even in a first year medical class, were the pertinent relation of physiology to practical medicine not continually stressed. Only a relatively small percentage of our medical students would, I believe, retain a continued interest in that phase of physiology which aims to reduce body functions to a fundamental physical or chemical basis.

In the very first session, therefore, the theme is announced that physiologic science represents the foundation of modern medicine and that the processes which lead to life, disease, senescence and death are meditated through fundamental chemical and physical reactions which express themselves as changes in function. This thought is reiterated, developed and exemplified as the course continues. The course rarely ends without students and instructors alike registering their regret that more hours cannot be devoted to this interesting phase of physiology. But, as in the successful drama, it is probably best to lower the curtain before the tedium of an overdrawn performance begins to dull the intellect.

The student returns to the study of physiology in the beginning of his second year for a period evaluated in the catalogue as 224 hours. Actually, considerable extra time is voluntarily spent by the majority of students. This itself is a favorable symptom. The first half is devoted to acquiring a practical knowledge of the essential subjects of respiration, blood, circulation, secretion, digestion, metabolism, the ductless glands and the central nervous system. The experiments in the laboratory are designed so that the student may: (a) acquire an elementary technic in operative procedures on animals; (b) learn the use of apparatus and methods which find equal applications in hospitals; (c) obtain firsthand observations on an experiment or two on each essential subject, and (d) develop practice in describing, analyzing and interpreting physiologic reactions. The second half of the course aims to reconsider more fully the subject matter already covered in an elementary manner, but it also correlates the functions of different systems and illustrates their clinical bearing. For example, acidosis, exercise, anoxemia, arrhythmias, fever, diet, diabetes, vomiting and ataxia, as they affect various organs, are discussed chiefly in conferences, or in lectures. We hope soon to establish closer contacts also with clinical departments to the end that students may visualize the clinical pictures of the particular physiologic process under discussion.

In the laboratory, students carry out experiments which stress similar relations between physiology and medicine. They no longer perform experiments calculated to demonstrate various aspects of respiratory, circulatory or secretory physiology, but rather they create and study experiments on dyspnea, acidosis, circulatory derangements of a physiologic nature, diabetes, fever and exercise. It may be added that this is not presumed to duplicate or to substitute for subsequent courses in pathologic and clinical physiology; it aims rather to prepare for these.

Toward the end of the period, each group of students is given an experimental problem, or itself selects one. The plan of attack is outlined, apparatus is supplied, the experiments are performed, and the results are analyzed. Sufficient time is allowed so that reports of each group are presented to the class as a whole. Discussion and criticism are encouraged.

During the course, every student is also required to select a subject of interest which he works up in detail in the reference library and presents in the form of a thesis.

To accomplish these ends demands a careful apportionment of the student's available time for reading, reference work, lectures, conferences and laboratory performance. The discussion now chiefly centers around the relative allotment of time for the performance of laboratory work and the amount of extramural notebook work that should be demanded. Within recent years, it has become somewhat the fashion to insist that laboratory work has become too extensive. The suggestion has indeed been offered that less time and money be invested in apparatus and animals and proportionately more in duplicating departmental library books. I cannot subscribe to this attitude. In the first place, without a reasonable laboratory experience the student fails to profit by reading any but the most elementary expositions. Secondly, such an attitude fails to appreciate the full purposes of the physiology laboratory in medical education.

As to notebook requirements, my attitude has been considerably changed by matters of expediency. I consider the careful writing of a notebook one of the most valuable methods of scientific instruction. By carefully noting the manner in which an experiment was performed and objectively describing the records of data which were obtained, the power of describing observed phenomena accurately is developed. This is one of the most important requirements of the successful diagnostician. By analyzing and plotting the data, experience in deduction from observed or recorded facts is gained. If conscientiously pursued, the method is of incalculable value. The laboratory notebook is the case history of the experiment, and I fail to follow the clinician who objects to the one and so greatly stresses the other.

However, the method is time consuming if properly carried out, and, with the pressure of other work, it is not surprising that the student attempts numerous short cuts. This results in presentable books but often fails entirely in the objects for which such work is designed. I have therefore gradually diminished the amount of required notebook work, and after the first year limit it to a mere record of data for the majority of experiments, only an occasional experiment being assigned for detailed analysis. As this means that more of the assigned time must be devoted to group and class conferences, the time available for formally presented didactic work is decreased; hence the students must be encouraged to rely more largely on outside reading and study, and less on lecture notes.

Early in the clinical courses of physical diagnosis, introductory medicine, or propedutics, and the phyiologic reactions in disease should be stressed. Possibly a separate course in clinical physiology should be given. But, most important, the application of physiology should be stressed continually. To do this successfully, the clinician himself must be abreast of his times and must always be ready to discard opinions which experimental work has shown to be erroneous.—Carl J. Wiggers, *J. A. M. A.*, July 28, 1928, p. 270.

Present and Future Status of Physical Therapy

Physical therapy should be represented in the medical curriculum by a two hour demonstration lecture weekly for one semester, to be followed in a later semester by a practical course in physical therapy given either four hours on one day, or twice weekly for two hours each day. There should be opportunity for special lectures on special subdivisions of physical therapy such as medical gymnastics, radiation, massage, roentgen-ray treatment, balneotherapy and climatotherapy. —J. Grober: *Physical Therapeutics*, 46: 331 (July) 1928.

Visual Teaching in Electrotherapy

The basis of both graduate and undergraduate study in physical therapy is pathology and clinical medicine on one side, and physics and biochemistry on the other. In teaching the application of thermal, luminous, mechanical and electrical energies a knowledge of the physics of the measure and of its mode of action on the body is essential. Students of electrotherapeutic measures must visual-

ize (1) what is going on inside of the apparatus when the current is turned on from the source of current supply; (2) what is going on underneath the electrode when the current is applied to the patient. This paper endeavors to cover part of this problem by presenting and classifying the various electric modalities and demonstrating practical points of their action.—RICHARD KOVACS: *Physical Therapeutics,* 46:282 (June) 1928.

Medical Education in Denmark

Medical education in Denmark is cheap, but extends over a longer period than in most other countries (university education, seven years) and is rather exacting. On the other hand, the Danish laws protect effectively the licensed physicians against competition from people without medical education. Unlicensed practice of any kind is illegal in Denmark and quackery has been forbidden since 1672. Dentists, midwives and masseurs exist, but, besides these, no licensed practitioners, who are not university educated physicians, exist in the country except a very few in that part of Schleswig restored to Denmark in 1918 by the Treaty of Versailles.

All Danish physicians have received the same university education.

The only valid qualification for medical practice is the certificate of having passed successfully the medical university examinations. By this certificate is acquired the university degree of *candidatus medicinae et chirurgiae,* corresponding to the doctor's degree at many foreign universities. In Denmark, the doctor's degree is a special degree, giving the right to lecture at the university without being a salaried lecturer. Only a minority of Danish physicians qualify themselves as university doctors, but it is a widespread custom to style every medical man as doctor, though his official university degree is "candidatus" and his rightful title "physician."

Denmark has but one university, the University of Copenhagen, founded in 1479, and every person who aspires to become a Danish physician must receive his medical education and pass the stipulated examinations at this university.

The right of being entered as an undergraduate at the university and of acquiring "academical citizenship" is conditional on the successful passing of the "students' examinations," which are held once a year at all the *gymnasia* (secondary schools) of the country. This examination is passed at the age of about 18, after twelve years of school education (five years preparatory school, four years middle school and three years gymnasium). In the gymnasium, the education is divided into three branches. In the first of these educational branches, most stress is laid on classical languages; in the second, on modern languages, and in the third, on mathematics and physics. The university instruction is nearly gratuitous. On his admission to the university, the student pays a small fee (about $5), and during the medical education he pays a nominal entrance fee for some of the laboratory courses and for the examinations. But during his university years, these expenses taken together only amount to about $30 in all. As a general rule, no fees at all are paid for any lectures, clinical or otherwise.

Foreigners are entitled to enter Copenhagen University if they have been at a foreign university, but do not on that account acquire the rights of Danes to get licenses as physicians in Denmark. Women have in all respects the same rights as men at the university. The General Danish Medical Association, comprising nearly all Danish physicians, has laid down definite rules for those aspiring to be acknowledged as specialists by the association. Several years of hospital training as assistants in special hospital departments is required.—*Federation Bulletin,* August, 1928.

Thirty-ninth Annual Meeting

INDIANAPOLIS

October 29-31, 1928

Book Reviews

Aids to Embryology

By Richard H. Hunter, lecturer in Anatomy, Queens University, Belfast. Wm. Wood and Co., New York, 1928.

This is a volume of the Students Aids Series. As such it is intended as an epitome of the subject to be used in preparation for examination. The topics are well presented and clearly described, although the limits imposed by such a small volume necessarily lead to much condensation. Anomalies are listed and explained. The only criticism is the absence of illustration. In all there are but thirty simple diagrams; more are needed and could be included without materially increasing the size of the book.

Surgical Anatomy

By Grant Massie, 413 pages, 121 illustrations (some in color). Lea and Febiger, Philadelphia, 1928.

In the preface of this work, the author expresses a wish to present anatomical facts in conjunction with their clinical application so that the student of medicine may be encouraged to keep his interest in the subject during his surgical appointments. The book resembles, to a certain extent, other English works on regional applied or surgical anatomy but an attempt seems to have been made to treat the subject with recent advance in the clinical branches in mind. The old anatomical terminology has been retained and the English rendering of the B. N. A. usually accompanies this. Many of the illustrations are excellent.

A Manual of Surgical Anatomy

Fourth edition, revised and enlarged by Charles R. Whittaker, 471 pages, 116 illustrations (many in color). Wm. Wood and Co., New York and Edinburgh, 1928.

This work, although brief and, in purpose and arrangement, similar to other manuals on applied anatomy, seems to be an improvement over many of them. In it, significant anatomical facts that have a close bearing to the more common surgical procedures are dealt with in a simple clear-cut manner. The subject-matter is treated regionally and is illuminated by diagrams, some of which are especially instructive. Roentgenographs and photographs play an important part in the illustration of this book; and the English rendering of the B. N. A. terminology has been favored throughout. It should be a distinct aid to students in the clinical courses who desire to keep the facts of anatomy before them.

Urinary Analysis and Diagnosis by Microscopical and Chemical Examination

By Louis Heitzmann, M. D., fifth revised edition, with 131 illustrations and a chapter on the determination of the functional efficiency of the kidneys by Walter T. Dannreuther, William Wood and Company, New York, 1928.

The author of this volume of 366 pages was formerly professor of pathology and bacteriology in Fordham University School of Medicine. The outstanding feature of the book is its frank dogmatism, particularly with reference to the microscopic examination of urine. An opening chapter of eight pages covers very briefly the histology and secretory function of the kidneys. Then follow 71 pages devoted to chemical examination of urine. This section is clear, but the usefulness of the book would have been increased if the author had devoted some space to pointing out the sources of error in the simple routine tests.

In his preface the author laments that "unfortunately the majority of textbooks on this subject still teach that diagnosis cannot be made from a microscopical examination of urine except in those cases in which casts are present. No stress whatever is laid upon the epithelia found in the urine, since it is claimed that a diagnosis as to their location is impossi-

ble." The greater part of this book is therefore devoted to microscopical examination of urine, altogether 240 pages. Part Two contains descriptions of all manner of amorphous, crystalline and cellular elements to be found in urine. In Part Three varying combinations of these elements are worked into a very definite system of microscopical diagnosis of pathological conditions in the urinary and even in the genital tract. These two sections are profusely illustrated by diagrammatic drawings that may mislead the inexperienced by their extreme definiteness.

Eleven pages, contributed by Dr. Walter T. Dannreuther, Professor of Gynecology in the New York Postgraduate School, covers the subject of the determination of the functional efficiency of the kidneys. This section is reasonably clear as far as it goes but it is obviously too brief to contain anything that is especially distinctive.

This volume is interesting and will probably prove useful because it contains a more extensive description of microscopical structures found in the urine than is found in the usual textbook on clinical pathology or laboratory methods. In a field in which the author admits that "the majority of textbooks still teach that diagnosis cannot be made from microscopical examination of urine," he would be a safer guide were he less dogmatic and his system of microscopical diagnosis of the urine less rigid and exact.

Clinical Diagnosis by Laboratory Methods

A working manual of clinical pathology by James Campbell Todd and Arthur Hawley Sanford. Sixth edition, 748 pages with 346 illustrations, 29 in colors. W. B. Saunders Company, Philadelphia, 1927.

The first edition of this excellent "working manual" appeared twenty years ago. The first five editions were the product of the experience of the senior author, the late Professor J. C. Todd, in the laboratory and the class room. In the revision for this latest edition Dr. A. H. Sanford, of the Mayo Clinic and the Graduate School of the University of Minnesota, becomes co-author.

Practical experience in teaching clinical pathology has convinced the authors that the errors of students "in microscopic diagnosis spring less frequently from ignorance of the typical appearance of microscopic structures than from imperfect preparation of the material, faulty manipulation of the microscope, or failure to recognize extraneous structures, artifacts and various misleading appearances." In order to obviate these difficulties special attention has been given to the use of the microscope, to correct details of technique and to the distinction between the extraneous and the essentially pathological.

This new sixth edition is 14 pages shorter than the preceding fifth edition. The elimination of much that has been proved to be of little value has not only shortened the volume but has given place to much more valuable material. No new chapters have been added. The revision has consisted chiefly in the insertion of new material in its proper place. The portion on blood chemistry has been greatly improved. "Perhaps the most complete revision has been in the chapter on Animal Parasites, which has been largely rewritten." The illustrations in this chapter are especially to be commended because the authors have dispensed almost entirely with the diagrammatic sketches which generally illustrate chapters and textbooks on this subject. The new classification of bacteria proposed by the Committee of the Society of American Bacteriologists on characterization and classification of bacteria is given in tabular form with their equivalents under the old terminology.

This new edition of this well known and thoroughly tried textbook maintains the high standard of preceding editions and can be unqualifiedly recommended to students and laboratory workers as a reliable guide in laboratory technique and in the interpretation of laboratory findings.

Text-Book of Pathology

Delafield and Prudden. Edited by F. C. Wood. 14th edition. Wm. Wood and Company, New York, 1928.

This 14th edition has little essential variation from the previous one of three years ago. It has 1339 pages, 830 illustrations and 20 full page plates, as compared with 1354 pages, 810 illustrations, and 18 full page plates of the former edition. New material is found in vitamins as chemical factors in life, and in the discussion of the thyroid and of the pancreas. Added points are also found in the chapter on blood, as to blood reaction, the reticulo-endothelial system, and sickle cell anemia. Tumors of the lungs are given additional emphasis. Rickets is discussed more fully. In the chapter on the nervous system, paralysis agitans and tuberculosis are rewritten. The most notable omission is that of the chapters on the lesions induced by poisons, and the preservation and preparation of pathological specimens.

The traditions of this text are such that to an editor, however broad his experience and judgment may be, any alteration must seem an arduous task, and the process of deletion, especially, almost sacrilegious. It is evident, however, that in the development of pathology as a branch of medical science, many of its earlier relationships have been altered. A newly written pathology would hardly contain a general chapter on plant parasites, giving the morphology, physiology, and distribution of bacteria, yeasts and moulds. The conventional chapter on animal parasites and the material on the life cycle of malarial parasites are probably better included under a heading other than pathology. Also reminiscent of earlier days are the parts of normal histology which are given, such as the five pages devoted to the structure of the cell and modes of cell division, and further, the morphology of normal blood cells, and of the normal kidneys.

As closely as immunity and the immune bodies, with the phenomena of complement fixation, allergy, and anaphylaxis, are associated with pathology, yet it is evident that a chapter on immunity can be only a short review of material contained in a well conducted course in immunology. The protocols of laboratory technique given in certain chapters are too limited to allow the use of the book as a laboratory manual, and add nothing to its value as a pathology text. The illustrations are well chosen, in general, as amplifying the text. Many of them show a differential touch of color, and others would obviously be improved by the presence of such differentiation, even though the cost of production might be increased.

Nerve Tracts of the Brain and Spinal Cord

By William Keiller, F.R.C.S., Professor of Anatomy and Applied Anatomy, University of Texas. 456 pp., 228 illustrations. The Macmillan Company, New York, 1928.

It seems that there is more than one attitude an author can take in writing a text-book. The aim of Dr. Keiller as expressed in the preface is to present the subject "in such a manner as to enable students to approach nervous diseases, thinking in terms of anatomy, physiology, and pathology, as applied to the nervous system." The text is divided into three parts, and, as the illustrations are all confined to a fourth division, it is easy to determine the quantity of text material dealing with different topics. While a quantitative measure in pages can not give one an idea of the quality of the subject matter, it can indicate the author's estimate of relative values. Part I is devoted to the anatomy of the nerve tracts, and contains 110 pages. Part II deals with the anatomy and physiology of the nerve tracts, and covers 58 pages. Part III dealing with applied neurology has 149 pages, and is followed by 106 pages of illustrations applying to all parts of the text.

The subject matter of Parts I and II can be discussed together. Part I contains descriptions of laboratory methods, descriptions of a series of cross sections of the cord and brain stem, and a consideration of the tracts as studied by degeneration methods and in fetal ma-

terial. The descriptions refer frequently to illustrations in the back of the book. In Part II the tracts are again discussed, but from a functional standpoint. Motor and sensory neurons are treated separately, and according to their normal and pathological activity. This method of study is applied not only to the various tracts, but to cell groups in the nervous system. The method of studying the functional aspects of the tracts is to be commended, as are also the general summary of the tracts at the end of Part I and the treatment of the cerebellar complex in Part II. There are, however, several points of weakness in this portion of the text.

To begin with, the author takes it for granted that the student is thoroughly acquainted with the gross anatomy of the nervous system, and makes no effort to cover that phase of the subject. It has been our experience that students learn the general anatomy best along with a study of the tracts, especially that which is seen in sections of the brain. Now, there are in the text detailed descriptions of many sections, and these are illustrated in the back of the book, but the illustrations do not appear clear enough. They are zinc etchings of pen drawings and did not reproduce well enough for a beginning student to interpret them with ease. It seems likely that the illustrations would have been more usable if they had been scattered through the text in the usual manner.

The author states that the text has been made up from lectures, which probably accounts for the frequent repetition of certain facts. For example, the description of the course of the pyramidal tracts is repeated in almost identical phraseology in four places. While realizing the value and the necessity of repetition in teaching, especially in lectures, the space in the text probably could have been filled with more significant details, such as, for instance, some of the work reported in the literature of the past decade. And in this point appears the greatest weakness of the text. There are dogmatic statements in it which published work has disproven, or added to. For example, the discussion of the effects of chromatolysis (p. 11) tells only half the story, and there exist a number of papers dealing with the nuclei of the trigeminal nerve sufficient to indicate that it is not true that "nothing is known" of the function of the mesencephalic root and nucleus (p. 124). This lack of thoroughness in the treatment of topics, with an almost total lack of reference to authority, makes one sceptical toward statements about disputed points. The inclusion of the sympathetic system as a part of the entire neural mechanism promotes the idea of the integrity of the nervous system, but more details of its structure would have been welcome.

Part III is perhaps the best portion of the book. It has considerable value as an introduction to applied neurology, provided the reader has a good foundation in the anatomy and physiology of the nervous system. Terms are defined clearly and general principles of abnormal functions of neurones are given in a way easy to understand. A number of neurological disorders are described and illustrated with clinical cases. The figures in the back of the text which illustrate these are quite adequate.

It is unfortunate that the author did not succeed as well with Parts I and II as he did with Part III. Then the book would have been a very useful one for junior medical students to use as a review of anatomy and physiology and an introduction to applied neurology. As it is the book does not seem adequate for students beginning the study of the nervous system.

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Minnesota

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University of Minnesota Graduate School, Medical Department, Minneapolis and Rochester.

Mississippi

University of Mississippi School of Medicine, University.

Missouri

St. Louis University School of Medicine, St. Louis.

University of Missouri School of Medicine, Columbia.

Washington University Medical School, St. Louis.

Nebraska

Creighton University School of Medicine, Omaha.

University of Nebraska College of Medicine, Omaha.

New Hampshire

Dartmouth Medical College, Hanover.

New York

Albany Medical College, Albany.

Columbia University College of Physicians and Surgeons, New York.

Cornell University Medical College, Ithaca and New York.

Long Island College Hospital, Brooklyn.

New York Post Graduate Medical School, New York.

Syracuse University College of Medicine, Syracuse.

University and Bellevue Hospital Medical College, New York.

University of Buffalo Medical Department, Buffalo.

North Carolina

University of North Carolina School of Medicine, Chapel Hills.

Wake Forest College School of Medicine, Wake Forest.

North Dakota

University of North Dakota School of Medicine, University.

Ohio

Ohio State University College of Medicine, Columbus.

University of Cincinnati College of Medicine, Cincinnati.

Western Reserve University School of Medicine, Cleveland.

Oklahoma

University of Oklahoma School of Medicine, Norman and Oklahoma City.

Oregon

University of Oregon Medical School, Portland.

Pennsylvania

Hahnemann Medical College and Hospital, Philadelphia.

Jefferson Medical College of Philadelphia.

University of Pennsylvania Graduate School of Medicine, Philadelphia.

University of Pennsylvania School of Medicine, Philadelphia.

University of Pittsburgh School of Medicine, Pittsburgh.

Woman's Medical College of Pennsylvania, Philadelphia.

Philippine Islands

University of the Philippines College of Medicine, Manila.

South Carolina

Medical College of the State of South Carolina. Charleston.

South Dakota

University of South Dakota College of Medicine, Vermillion.

Tennessee

Meharry Medical College, Nashville.

University of Tennessee College of Medicine, Memphis.

Vanderbilt University School of Medicine, Nashville.

Texas

Baylor University College of Medicine, Dallas.

University of Texas Department of Medicine, Galveston.

Utah

University of Utah School of Medicine, Salt Lake City.

Vermont

University of Vermont College of Medicine, Burlington.

Virginia

Medical College of Virginia, Richmond.

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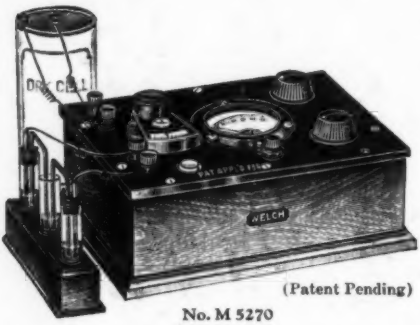

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